THE OLDEST ELECTRICAL PAPER

# ELECTRICAL REVIEW

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# Dollar-Pound Relationship

## DEVALUATION AN INCENTIVE, NOT A SOLUTION

IN announcing the decision of the Anglo-American-Canadian Conference to lower the official rate for the pound sterling as against the dollar, Sir Stafford Cripps said that this would not provide an automatic solution of our difficulties. The extent to which devaluation will contribute to the solution is also something which has yet to be seen.

The immediate effect is to increase the "dollar gap" by raising the costs of our imports from the United States and other countries which have not altered their dollar rates and to reduce the return from our exports to those countries. It is hoped that this situation will be rectified partly by importing less but mainly by exporting more. On the face of things we must increase our sales to "dollar" countries by over a third to maintain our present dollar earnings, but actually it is not necessary to go all the way and reduce all prices to the new level. The reduction need be sufficient only to increase our competitive powers. In this connection it has to be remembered that some of our competitors in the American market have also devalued their currencies.

### Possibilities for Electrical Industry

The British electrical industry does not figure largely in United States import trade. But perhaps because our share is small it will be easier to raise it, although if we are to sell coals to the American Newcastle they will have to be of very special grades.

Greater possibilities present themselves in Canada, possibilities which are now the subject of intense study. The Canadian dollar has also been devalued by about 10 per cent, but this will be to our advantage on balance as American prices will be raised to Canadian buyers while ours will be substantially lower.

Switzerland is a larger buyer of British electrical goods than the United States, but so far this year has bought less than in the corresponding period of 1948. Here there is probably scope for a small expansion as the Swiss are maintaining their dollar exchange rate.

### Costs of Raw Materials

Conditions for British electrical exporters should be eased by the rise in prices of American goods in all sterling and most European markets. Nevertheless, as importer, the electrical industry will find its materials costing more.

So far this year Canada has been the biggest supplier of unwrought electrolytic copper, a position which the United States held in the first eight months of 1948. Northern Rhodesia has also got ahead of the United States, as have Belgium and the Belgian Congo combined. The proportion of unwrought lead coming from the United States is small; in the first eight months of this year about two-thirds came from Australia and under a sixth from Canada.

The Ministry of Supply has raised non-ferrous metal prices and rubber, although coming from "sterling" areas, is to cost

more, mainly to secure more dollars from American buyers.

These increases and the higher prices of other raw materials and food derived from the United States must inevitably increase the cost of living in this country. It is hoped, however, that the increase will not be so great as to encourage general demands for higher wages. It is plain that our present standards can only be maintained by greater production, which means harder work, improved efficiency and a better use of existing resources. Lower State expenditure would give much encouragement. Devaluation is no substitute. We must give better value for money than our competitors if we are to survive.

**HARROGATE CHOSEN**

It was reported in our issue of 12th August that the Harrogate Corporation had invited the organizers to hold the Second British Electrical Power Convention at their resort. The invitation has been accepted and the Convention, under the presidency of Sir Vincent de Ferranti, will be held at Harrogate during the week commencing 19th June, 1950. All sections of the electrical industry will be represented.

**ELECTRICITY FOR UGANDA**

Following the conclusion of a contract for the construction of the dam and power house at Owen Falls on Lake Victoria, Uganda, work on the project is to begin very soon. It is anticipated that the first part of this important undertaking—four of the ten 15 MW sets—will be in operation in about four years' time. In one respect the Owen Falls scheme resembles that in the North of Scotland; the power it produces will form the basis of industrial development in an area at present practically entirely fallow. The Uganda Electricity Board emphasizes that this is no exploitation of the native population. On the contrary, the hope is that the native standard of living will be vastly improved.

**SHENFIELD ELECTRIFICATION**

The inauguration on Monday of this week of electric traction on the Eastern Region section of British Railways out of Liverpool Street as far as Shenfield, as detailed elsewhere in this issue, is the culmination of a project contemplated soon after the 1914-18 war. The work of conversion, which was stopped during the second world car, has been much hampered in several ways since, and so many modifications were made that hardly one of the original specifications remained valid upon completion of the change-over. Nevertheless the remodelling of this four-track railway, carrying part of the densest steam-operated train services in the world and at one time considered by old-time railwaymen to be "non-electrifiable," has been accomplished with remarkably few serious cancellations or diversions of daily steam traffic.

**RE-SIGNALLING**

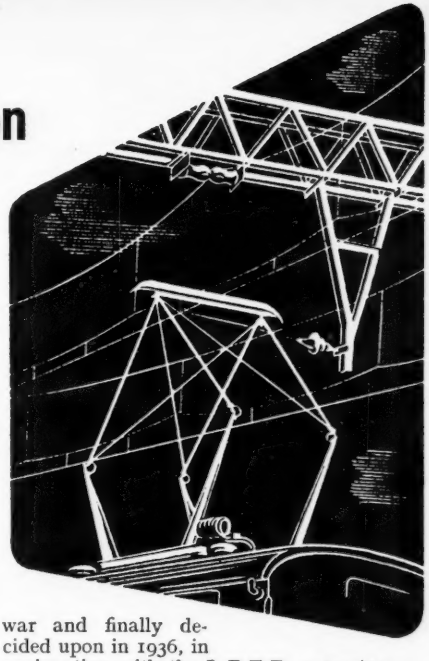
Extensive modernization of the signalling equipment has been necessitated by the electrification of part of London's eastern approach railways. The building of nine all-electric boxes has enabled thirty-one mechanically worked signal cabins to be dismantled, the well-known 240-lever box at Liverpool Street station being among those now abolished. Instead of moving levers, the signalman now actuates a switch which sets the route desired and clears the relative signals so soon as the selected route becomes available.

**THE E.P.E.A.**

When the Minister of Fuel and Power at the Electrical Power Engineers' Association dinner referred to the functions of trade unions nowadays as transcending questions of pay and conditions of service, he was but voicing what has always been the aim of the Association. Indeed the progress of the electricity supply industry has from the outset been specifically defined as Object No. 1. As Mr. Gaitskell handsomely aknowledged, and Mr. Seddon (the president) confirmed, the E.P.E.A. had the reward of seeing its constructive proposals embodied in the Act of 1947. It can also claim substantial credit for the smoothness of the transition. This tribute, together with such educational activities as the work of the Technical Groups and, further, the healthy increase in membership, furnishes evidence of the soundness of the views of those who launched the Association.

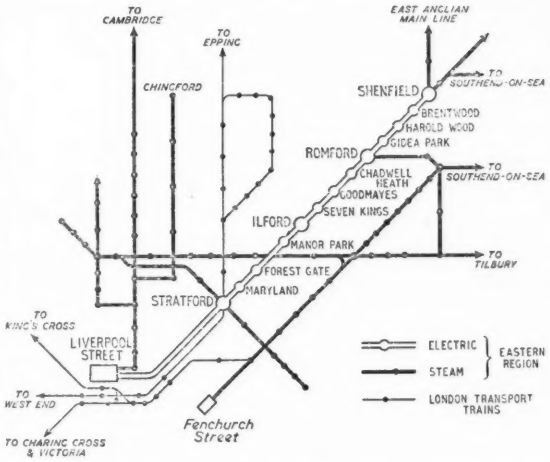
# Railway Conversion

## *Inauguration of Liverpool Street to Shenfield Electrification*



PEOPLE who daily journey into London by the thickly populated eastern approaches will recall 26th September as the date on which the Minister of Transport inaugurated electric traction on the line between Liverpool Street and Shenfield. Gradual substitution of multiple-unit electric stock for trains hauled by steam locomotives will make the change-over fully effective by 7th November.

This section of British Railways (Eastern Region) was a small part of the Eastern Counties Railway of 1837, which became the Great Eastern Co. in 1862 and then part of the London & North Eastern system in 1923, by which date this particular section of track was claimed to be carrying one of the densest steam-operated suburban services in the world.

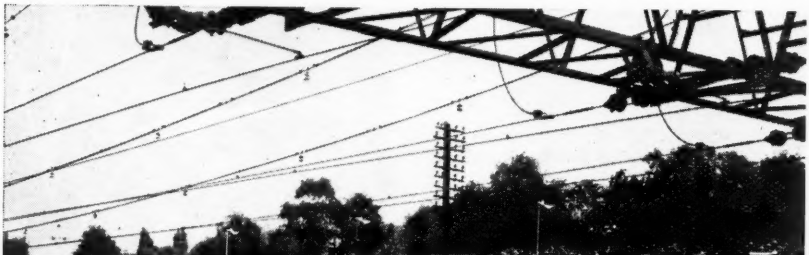



**Route map of electrified line**

Route congestion of many sorts has complicated the conversion to electric traction, which was considered before the war and finally decided upon in 1936, in conjunction with the L.P.T.B. extension of the Central London tube (*Electrical Review*, 23rd Sept., 1949, p. 554) which, by permitting the withdrawal of certain steam services, enabled more trains to be passed through the Liverpool Street-Stratford "bottleneck" (see map).

The scheme necessitated much heavy civil engineering and constructional work (96 contracts) which commenced in 1937 and was suspended in the summer of 1940; when the scheme was resumed in 1946 important modifications had been introduced, including a decision to electrify all four tracks (25 route miles, or 110 miles of single track) instead of the up and down "through" and "local" lines as far as Gidea Park and the "local" lines

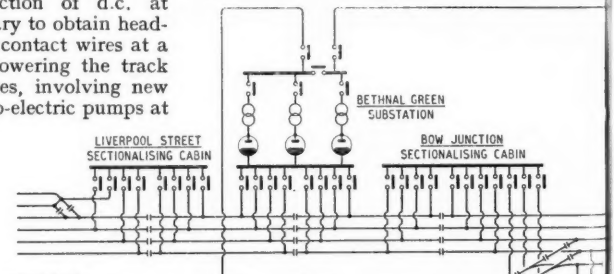
only beyond. Reconstruction was hindered by shortages of materials and remodelling hampered by lack of skilled labour, but electrical installation work and resignalling had meanwhile proceeded steadily.



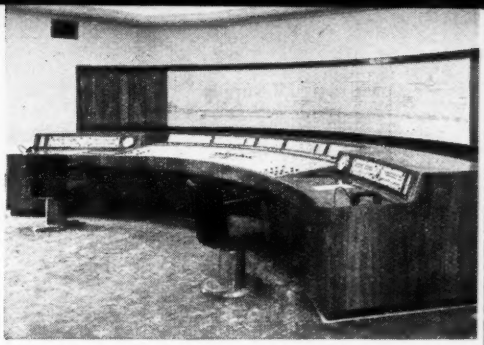
**Mercury rectifier sub-station at Shenfield**

The decision to adopt the "approved" system of train collection of d.c. at 1,500 V made it necessary to obtain headroom for the overhead contact wires at a number of places by lowering the track under existing structures, involving new track drainage and auto-electric pumps at two stations to deal with storm water.

The overhead conductors are catenary suspended 16 ft above the running rails (*Electrical Review*, 26th Nov., 1948, p. 832) from steel bridge structures spanning the track and normally spaced 210 ft apart. The large number of low bridges in many instances demanded special construction, while a number of the structures carry signals as well as overhead line equipment. On these are mounted the capacitor surge and lightning protectors and the line-isolating switches (operated from ground level) which are connected by 1.0 sq in feeder cables, rubber covered and laid in wood trunking, to the track sectioning cabins (see diagram) and the substations. The return circuit to the latter is through the track rails, which are bonded together by rope-stranded copper, gas-welded to the rail heads. The overhead structures are bonded to the rails where single track circuits are in opera-



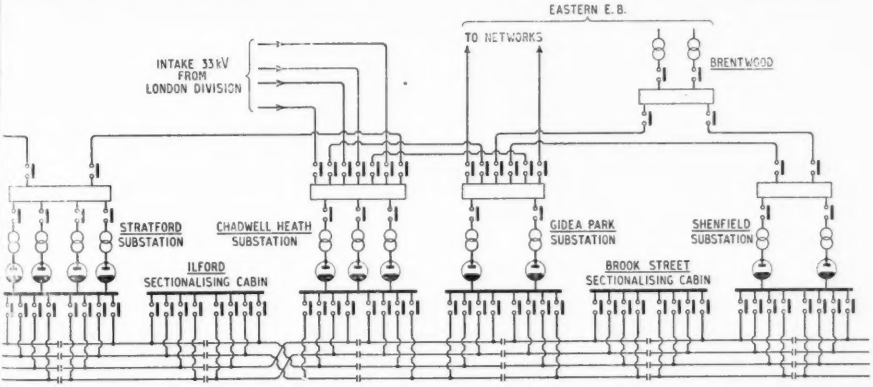

**Power intakes to substations showing track conductor sectionalizing cabins**



**Distribution control room at Chadwell Heath showing mimic diagram desk**

tion, but for double-track circuits an earthing wire interconnects the overhead structures.

There are two power intakes from the B.E.A. system, 50 c/s three-phase, at 22/33 kV from the London Division and at 33 kV from the Eastern Division (see diagram), while 33 kV cables routed along the tracks interconnect the substations. There are h.v. switches between the interconnecting feeders and bus-bars and between the latter and step-down transformers associated with the twin 1,000 kW mercury arc rectifiers, which are of the six-anode pumpless steel tank type. Their d.c. output goes through high speed circuit breakers to 1,500 V bus-bars and thence through similar breakers and feeder cables to the track-sectioning cabins, wherein high-speed breakers and bus-bars parallel the overhead conductor lines to limit traction voltage drop and enable track faults to be cleared quickly.



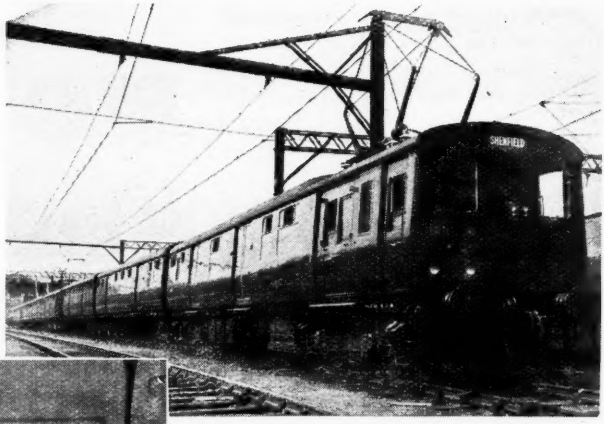

The six substations and four track-sectioning cabins are unattended. They are linked with a control room near the Chadwell Heath substation by duplicate telephone-type cables routed along the tracks and containing multi-cores for switch actuation, fault indication, cable protection and telephone communication purposes.

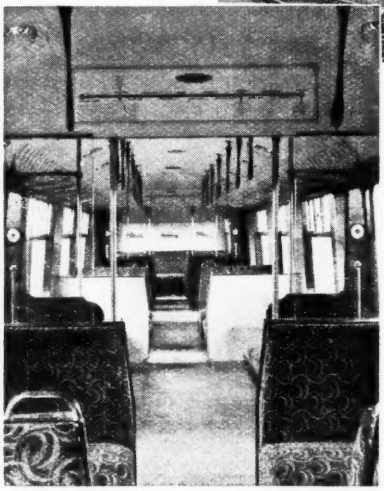
The m.d. is estimated to be about 4,000 kW at the Crosswall intake and 12,000 kW at Chadwell Heath, with an approximate consumption of 10 million and 30 million kWh/year respectively.

The rolling stock of 92 three-coach sets (motor-trailer-driving trailer) to carry 176 seated and 232 standing passengers will run as three-, six-, or nine-coach trains. Each three coach set is 177 ft 7 in long, 9 ft 3 in wide and 12 ft 2¾ in high. The brake gear is electro-pneumatic with automatic slack adjusters. Each all-steel body has two pairs of electro-pneumatic sliding doors. The exterior colour is the standard green of electric stock; the open saloon interiors are lined with plywood veneer; semi-indirect bowl fittings in the roof contain 60 W lamps.

Each motor coach has four 210 h.p. traction motors nose-suspended on two bogies. The gear ratio is 71:17, the wheel diameter being 43 in, and the maximum speed is 70 m.p.h. with an acceleration of 1.25 miles/hour/sec when all seats are occupied. Current collection is by a single pantograph on each motor coach and each three-coach unit is fed from its

own 1,500 V supply from the motor coach. The motors are in two groups of two, permanently connected in series, while electro-pneumatic contactors group the motors into combinations. There are 11 series, five parallel, and one weak field notches in the control circuit; also an electro - pneumatic reverser; switches, fuses, contactors and relays in cases suspended from the underframe; a motor-driven compressor, air reservoirs, and brake equipment; a motor generator for 52 V control current; starting resistances and a battery. The control of the motors is by electro-pneumatic contactors working at 70 lb/sq in air pressure.





Nine-coach train leaving Ilford sidings and (left) open saloon trailer coach interior

The traction motors are self-ventilated through louvres in the coach side and ducts under the floor and are rated as follows:—

| | One hour Rating Weak Field | One hour Full Field | Continuous Weak Field | Continuous Full Field |
|---|---|---|---|---|
| H.P. | 210 | 175 | 157 | 120 |
| Amps. | 260 | 220 | 195 | 150 |
| R.P.M. | 1050 | 815 | 1295 | 1030 |
| Volts | 675 | 675 | 675 | 675 |

A nine-coach train with all seats occupied has a power-weight ratio of 7.25 h.p./ton at the hourly rating in weak field.

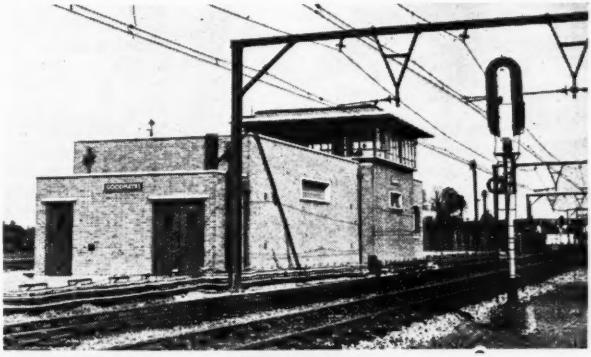
Electric heaters under the seats are thermostatically controlled; in each coach is about 8 kW of heating and 1.5 kW of passenger lighting. The heater circuits

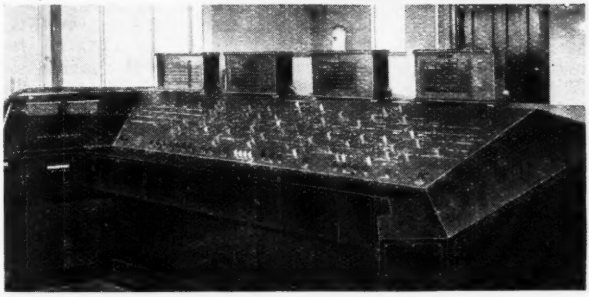
Looking east at Stratford Central junction; semaphore signalling being removed

are at 1,500 V and the lighting at 52 V.

The motorman sits with master controller and brake controller in front of him. To the right is a set of push buttons for operation of pantograph, motor generator, etc; controls for whistle and pneumatic windscreen wiper are on his left, while the sanding pedal is close to his foot. Between the windows in the front of the cab are switches for the low voltage to the control gear, for the cab light, marker lights and gauge light, as well as indicator lamps for the electro-pneumatic brake, pantograph and motor-generator set. On a few of the motor coaches an electrical speed indicator is included, while six of the driving trailers have a periscope in the motorman's cab for observation of the overhead equipment and current connection.

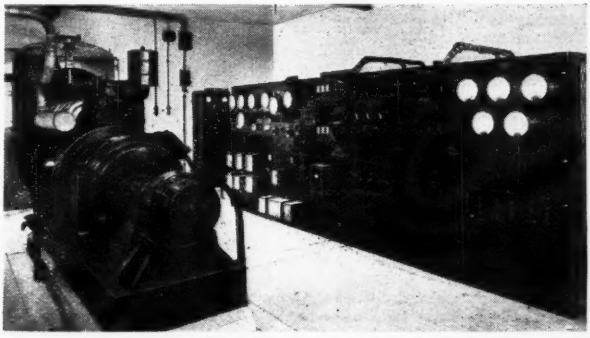
In the guard's compartment are switches for train heating and lighting and push-button switches for passenger doors throughout the train. There is also a change-over switch for a.c. compartment lighting while the train is being cleaned at the Ilford maintenance depot.





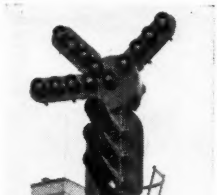
**Signal box at Goodmayes and (left) route relay interlocking switch panel**

It was necessary to re-signal the lines from Liverpool Street to Gidea Park to permit 1½ minutes' headway between trains. This has been accomplished by installing four-aspect colour lights with continuous track circuiting throughout. Nine new signal boxes have been erected, while three existing boxes have been modernized; thirty-three mechanical signal boxes are abolished, together with the old Sykes lock and block system.



**Signalling stand-by power house at Chadwell Heath showing 70 KVA diesel-alternator and switchboard**

Six of the new boxes have switch control panels operating on route-relay interlocking principles, while the others have switch panels suspended above mechanical lever frames operating on individual switch control principles interlinked with the mechanical frames by electric interlocking. At Gidea Park the new system links up with the existing colour light signalling to Chelmsford and Southend—one of the longest continuous sections of main line colour light signalling in the British Isles (41½ miles).



**Three-aspect colour light signal with three-way junction indicator at Bow**

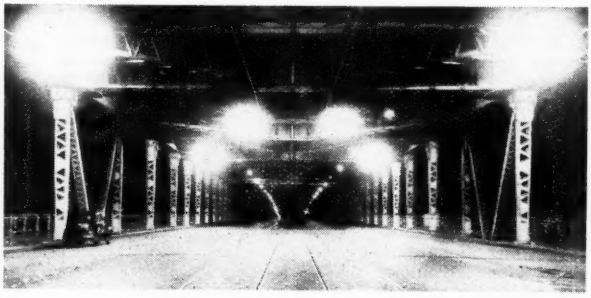
The following apparatus has been installed: 1,117 a.c. track circuits, 473 colour light signals, 205 floodlit disc signals, 69 five-light junction indicators, 61 route indicators, 102 automatic signal sections, 460 sets of electrically operated points, 99 sets of mechanically operated points, nine route relay interlocking panels and six switch diagram panels.

The running signals are spaced to allow braking distance for electric trains running at 75 m.p.h., and all running signals are equipped with telephones operating on a coded selective system to enable a driver, when held at a signal, to obtain instructions from the signalman. The signalling contractors were Siemens & General Electric Railway Signal Co., Metropolitan-Vickers-GRS., Ltd., and the Westinghouse Brake & Signal Co., Ltd. Other main contractors included the English Electric Co., Ltd., train equipment; British Insulated Callender's Cables, Ltd., overhead conductor lines; General Electric Co., Ltd., substations with Standard Telephones & Cables, Ltd., for their supervisory control; and Johnson & Phillips, Ltd., high-voltage and pilot cables. There were nearly 40 other electrical contractors.

Mr. H. H. Swift is the electrical engineer, N. & N.E. Regions, British Railways, and Mr. A. Moss is signal and telecommunication engineer, Eastern Region.

## Lighting of Calcutta Bridge

THE success of fluorescent street lighting at home and overseas has led to an interesting trial of this form of illumination on the New Howrah Bridge, Calcutta. In April, in accordance with a complete scheme drawn up by the Bridge Commissioners' consulting engineers for lighting the carriageways, footways and approaches, six B.T.H. "Mazda" fluorescent street lighting lanterns were erected on the bridge, each housing three 5ft 80 W "daylight" fluorescent lamps and mounted at 23ft 6in to 25ft above the roadway in double-staggered formation at approximately 85ft spacing.



**New Howrah Bridge, Calcutta, with the trial installation of "Mazda" fluorescent street lighting in foreground**

First-class illumination is essential on this heavily used thoroughfare, and it has been shown that the fluorescent lighting is a very great improvement on the existing temporary tungsten installation, giving excellent visual conditions without glare. The lanterns have successfully undergone severe weather tests since their installation, from an unusually large number of storms.

# *Views on the News*

**By REFLECTOR**

IT should be reassuring, to anyone who still doubts the harmlessness of fluorescent lighting, to know that it is installed in some of the last places one would expect to find it if it were injurious to the health. *Light and Lighting* mentions a few significant places in the London area —the Institute of Ophthalmology (which is associated with the combined Moorfields, Central London and Royal Westminster Eye Hospitals), the London School of Hygiene, the University College Hospital, the Royal Society of Medicine, the National Institute for Medical Research, the Ministry of Health headquarters and the Medical Research Council's building.

★ ★ ★

Much is heard nowadays of "precision engineering" but I doubt whether anything could be more precise than the announcement given at a Press conference last week as the value of the contract for the civil engineering side of the Owen Falls (Uganda) hydro-electric scheme. It was £3,639,540 5s. Surely a pound or two of cement could have been sacrificed to dispose of that extra crown.

★ ★ ★

The sensation of the past week has been the revelation that Russia has produced and tested atomic bombs. To many this will not have come as a surprise at all. Apart from possible "leakages" and the employment by the Russians of German physicists who had been working on the subject for years, the case of Dr. Peter Kapitza springs to mind. Kapitza worked for some time at the Cavendish Laboratory where he became assistant director of magnetic research, and was subsequently Messel Professor of the Royal Society and director of the Royal Society's Mond Laboratory. He was awarded the Faraday Medal by the I.E.E. in 1942, *in absentia*, for his "notable contribution to science in the generation and utilization of intense magnetic fields." Before the war he went on leave to Russia, his native country, and never returned. It was generally believed at the time that he had been prevented from coming back to England. However that may have been, his name has cropped up from time to time in reports from Russia, making it clear that he had attained great eminence and favour in Moscow. It is very probable that he has taken a leading part in the development of atomic power and the production of the bomb.

★ ★ ★

Last week the *Manchester Guardian* "Miscellany" contained a reference to the provision made in New York to enable idle gazers to view the work on the construction of Radio City. A grandstand was erected by John Rockefeller after he had been "moved on" by the police. The idea seems to have caught on in the United States and while the Grand Coulee dam was under way, people were able to watch the work proceeding from a stand accommodating about 400. Maybe the B.E.A. could offset the cost of some of its new stations by setting up similar arrangements and charging a small fee. The majority of people seem to derive an inordinate amount of entertainment from the efforts of others.

★ ★ ★

I am forced to return to the case of the baby's "coatee" which I have already mentioned twice. In my original note I referred to the "Beacon," the periodical in which the article appeared, as "the employees' magazine of the North Western Electricity Board." For "Board" read "Division." The Board's journal is "Areatopics" which although it has a woman's section apparently does not give knitting instructions.

★ ★ ★

Quite noble impartiality seems to have been shown by the North Eastern Electricity Board during a recent load shedding. According to a local Press report the Board's headquarters, Carliol House, Newcastle, was deprived of power for about an hour. "Lighting in the building and small plant relying on electric power were stopped. Sales in the showrooms were held up as the various electrical gadgets could not be tried out by prospective buyers." As the cut was between 8.30 and 9.30 a.m., I cannot think that the effect was very serious.

# *Personal and Social*

## NEWS OF MEN AND WOMEN OF THE INDUSTRY

THE South Western Electricity Board has recently made new appointments of district managers in all parts of its Area except Cornwall. These appointments put into effect the Board's permanent organization which has now been set up following a careful study of the needs of the Area in the light of a year's actual working experience. The new districts will be responsible for all commercial functions, including local publicity and for the bulk of engineering work. In the majority of cases the district managers acted as the Board's senior executive officers during the transitional period following nationalization, although in some instances the area under their control has been extended.

Two exceptions are **Mr. H. W. Millatt,** A.M.I.E.E., manager of the Weston-super-Mare District, who was commercial officer in the Cornwall Sub-Area, and **Mr. A. W. Allwood,** M.Sc., M.I.E.E., A.M.I.Mech.E., manager, Torbay District, who was deputy chief engineer at the Board's head office.

For the time being no alteration is being made to the present organization in the Cornwall Sub-Area, which, with the exception of the St. Austell and Falmouth undertakings, was administered as a single undertaking before nationalization.

**Mr. W. A. Smyth,** director and general manager of Henry Meadows, Ltd., has been elected to the board of W. G. Bagnall, Ltd.

**Mr. W. A. McNeill,** B.Sc.(Tech.), M.I.E.E., has been appointed chief engineer of Cooke & Ferguson, Ltd., switchgear specialists, Manchester, and will take up his new appointment on 3rd October. Mr. McNeill has for many years been associated with high voltage switchgear as he was trained initially at the Metropolitan-Vickers Electrical Co., Ltd., and subsequently joined Ferguson Pailin, Ltd., and then the Brush Electrical Co., Ltd. In addition to taking an active part in B.E.A.M.A. and E.R.A. activities, Mr. McNeill presented a paper in 1948 to C.I.G.R.E., on the subject of "Pneumatic Control of Airblast Circuit Breakers."

Mr. W. A. McNeill

**Lt. Col J. E. I. Gaymer,** D.F.H., A.M.I.E.E., M.E.I.C., has been appointed co-ordinating engineer to Mr. Ranald J. Harvey, consulting engineer to the New Zealand Government. On graduating from Faraday House, Lt. Col. Gaymer joined the American General Electric Co. test course, and later the Canadian General Electric Co. During the war he served with the Canadian Army as a signals officer, and after the war transferred to Royal Signals, to serve with the Electrical Industries Branch of the Control Commission for Germany. He subsequently became Senior Industry Officer for the British Sector of Berlin.

Lt. Col. J. E. I. Gaymer

**Mr. N. F. Astbury** has been appointed to the Foundation Chair of Applied Physics in the New South Wales University of Technology, Sydney, and will shortly be relinquishing his position as director of research to the Guest, Keen and Nettlefold group of companies. He expects to leave for Australia in December.

**Prof. W. J. John,** Professor of Electrical Engineering at Queen Mary College (University of London), is accompanying **Dr. B. Ifor Evans,** Principal of the College, on a visit to the United States. They will inspect several universities and other institutions before construction begins of new laboratories at Queen Mary College.

**Mr. R. L. Howe,** Associate I.E.E., A.M.I.B.A.E., has been appointed as consumers' engineer for the Central Sussex District, South Eastern Electricity Board.

**Mr. J. V. Payne,** A.M.I.E.E., principal executive assistant to the electrical engineer of London Transport Executive, has retired after forty-five years in public transport. He joined London United Tramways and worked for some time in sub-stations before

being appointed assistant divisional engineer, northern area. In 1948 he also took over the southern area. He has served on committees of the B.S.I., E.R.A. and the M.P.T.A.

**Mr. W. E. Preston** has been appointed engineer and representative of Everett, Edgcumbe & Co., Ltd., in Scotland and North East England. He will have his headquarters in Newcastle. In consequence of this appointment some changes have been made in connection with the area covered by **Mr. E. R. A. Milne,** who with his headquarters in Manchester will now be responsible for Derbyshire and North Staffordshire in addition to the Lancashire, Cheshire and Yorkshire districts.

An interesting revival of an annual event, the first to be held since 1938, was the **General Electric Company's** golf meeting and final of the Hugo Hirst Cup, which took place at Sonning Golf Club on 17th September. The Hon. Mrs. Leslie Gamage attended and presented the prizes at the conclusion of the day's play. In addition to the 36 holes medal competition for the Hirst Cup won by Mr. H. S. Dupin (London Sales), with Mr. A. MacGregor (Glasgow) as runner-up, there was an 18-hole medal round in the morning in which "veterans" over forty-five years of age competed for the Veterans' Cup previously held by Mr. E. Silbermann. This was won by Mr. H. Pugh (London Sales). A Senior Veterans' Cup competition, played for the first time, was won by Mr. F. Winstanley. Another morning event was the medal competition won by Mr.

**The Hon. Mrs. Leslie Gamage presenting the Hugo Hirst Cup to Mr. H. S. Dupin at the annual G.E.C. golf meeting. Mr. F. Winstanley is seen on the left**

F. J. Thompson (London Sales) with Mr. C. Boyes, also of London Sales, as runner-up. In a best-ball, four-ball ocmpetition against bogey with prizes for the first and second pairs, the winning pairs were Messrs. C. E. Furness and B. E. Crow (London Sales); and Messrs. F. Newlands (Claude-General) and E. Silbermann (Reliance Telephones). The day's events were concluded by the annual dinner of the G.E.C. Golfing Society, held in the Sonning Golf Club House, at which Mr. R. E. Robinson (of Coventry) presided. Numbered amongst the guests were several overseas visitors. A presentation of a dozen golf balls was made to Mr. F. Farthing, hon. secretary of the Society and organizer of the meeting.

**Mr. J. Kirkwood,** B.Sc., A.R.T.C., M.I.E.E., F.R.S.A., of the English Electric Co.'s Special Engineering Section at Stafford, has recently retired after forty-two years' service with the company. Before joining Siemens Brothers Dynamo Works, Ltd., a constituent of the English Electric Co., Mr. Kirkwood was chief assistant and lecturer in the Electrical Department of the Royal Technical College, Glasgow. He has been responsible for the company's electrical mining equipment in which his experience goes back to the earliest electric winders installed in British mines.

**Mr. J. Kirkwood**

**Mr. A. F. Vowles,** a control engineer at Meaford power station, was married on 17th September to Elizabeth Mary Lee, at Sutton Parish Church, Cambridgeshire. Mr. Vowles is the eldest son of Mr. G. A. Vowles, Yorkshire divisional controller of the B.E.A.

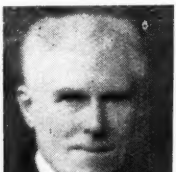
In the final of the Newcastle-on-Tyne area of the **Electrical Industries Benevolent Association** National Golf Competition, played at South Shields Golf Club, the winner of the Monkhouse Bowl was Mr. T. E. Dellow. Tankards were awarded to the second and third players and also for the foursome. Messrs. A. W. Nixon, J. R. Curry and A. J. Brown have qualified and agreed to play in the final for the Sir Montague Hughman Cup at Moor Park.

## Obituary

**Mr. R. Richardson.**—The death occurred on 19th September of Mr. Robert Richardson, manager of the North Western Area for the Brush Electrical Engineering Co., Ltd. Mr. Richardson was 44 years of age and had been the Brush Co.'s North Western Area manager for ten years. He served an apprenticeship with J. & H. Holmes, New-

castle, and before joining the Brush Co. was with the English Electric Co., as sales engineer in the Eastern Counties.

**Prof. C. L. Fortescue.**—The death occurred on 22nd September at the age of sixty-eight of Prof. Cecil Lewis Fortescue, O.B.E., M.A., M.I.E.E., Emeritus Professor, Imperial College, University of London, and a past president of the Institution of Electrical Engineers. Prof. Fortescue was educated at Oundle School and Christ's College, Cambridge. He served a two years' post-graduate apprenticeship at Siemens Dynamo Works and remained on the staff for a further year. Subsequently for five years he was instructor in electrotechnics and applied mechanics at H.M. Torpedo and Gunnery Schools, Portsmouth, and from 1911 to 1922 was Professor of Physics at the Royal College, Greenwich. He was president of the Institution of Electrical Engineers in 1942-43. Prof. Fortescue had been responsible for valuable work in the development of wireless telegraphy and had read a number of papers on the subject before the I.E.E., and the Physical Society.



**The late Prof. C. L. Fortescue**

**Lord Queenborough,** whose death at the age of eighty-eight occurred on 22nd September, was until his retirement in 1946 chairman of Siemens Brothers & Co., Ltd.

**Mr. C. W. Saunders.**—The death occurred on 21st September at the age of sixty-five of Mr. Charles W. Saunders, D.C.M., A.C.G.I., M.I.N.A., M.I.Mar.E., A.M.Inst.C.E., A.M.I.E.E., A.M.I.MechE., who until his retirement last year was for thirty years manager of the General Electric Company's Marine Department, which he created when he joined the company after being demobilized in 1918. Born in Dunedin, New Zealand, he served a general mechanical apprenticeship and went to sea in 1906, three years later obtaining his chief's certificate in London. He then took the electrical engineering course at the City and Guilds College and gained practical experience in various electrical works and at Twickenham power station. Mr. Saunders was closely associated with the building of a number of electrically propelled ships, including the *Monarch of Bermuda* and the *Queen of Bermuda*.

**The late Mr. C. W. Saunders**

At the funeral service, which took place at St. Clement's Church, Jersey, Sir Harry Railing, chairman of the G.E.C., was represented by Mr. C. P. Harrison, M.I.Mar.E., who succeeded Mr. Saunders as manager of the Marine Department.

**Mr. H. N. Thomas.**—The death occurred recently of Mr. Henry Nicol Thomas, A.M.I.E.E., gneral manager of the Durban Tramways Department from 1904 until his retirement in 1926. He was born in Manchester and before his appointment at Durban was general manager and engineer of the Huddersfield Corporation Tramways. He was eighty-three.

**Mr. E. G. Anness,** M.I.E.E., who retired a few years ago from the position of senior electrical engineer in London district of the National Boiler & General Insurance Co., Ltd., died on 21st September. After his retirement from the insurance company, he was appointed a director of Browning's Electric Co., Ltd. Arrangements are in hand for the publication by Pitman of his book "Maintenance of Industrial Electrical Plant," and it is sad that he has not lived to see the completion of this work.

**Mr. William McGeoch,** deputy chairman of William McGeoch & Co., Ltd., of which his grandfather was the founder, died on 21st September at the age of 80.

**Mr. W. Binns.**—The death occurred on 18th September at the age of seventy-seven of Mr. William Binns, managing director of the Keighley Fan and Motor Co., Ltd.

## Students' Norwegian Tour

FORTY members of the Students' Sections of the Institution of Electrical Engineers have recently returned from a fortnight's tour of Norway. The programme included visits to the new building of the Norwegian Broadcasting Company, plants of the Oslo electricity works, telephone exchanges, the Norwegian State Railways, a silver mine, the Norsk Aluminium Company's works, and power stations near Bergen.

The visitors were entertained on several occasions by members of Den Norske Ingeniorforening, and other generous hospitality was received during the course of the tour. Some 1,600 miles was covered in Norway by coach, rail and steamer. Mr. E. C. Snelling, of Electronic Transmission Equipment, Ltd., led the party.

# National Supply Survey

## ELECTRICAL ASSESSMENT OF THE FOURTEEN AREAS

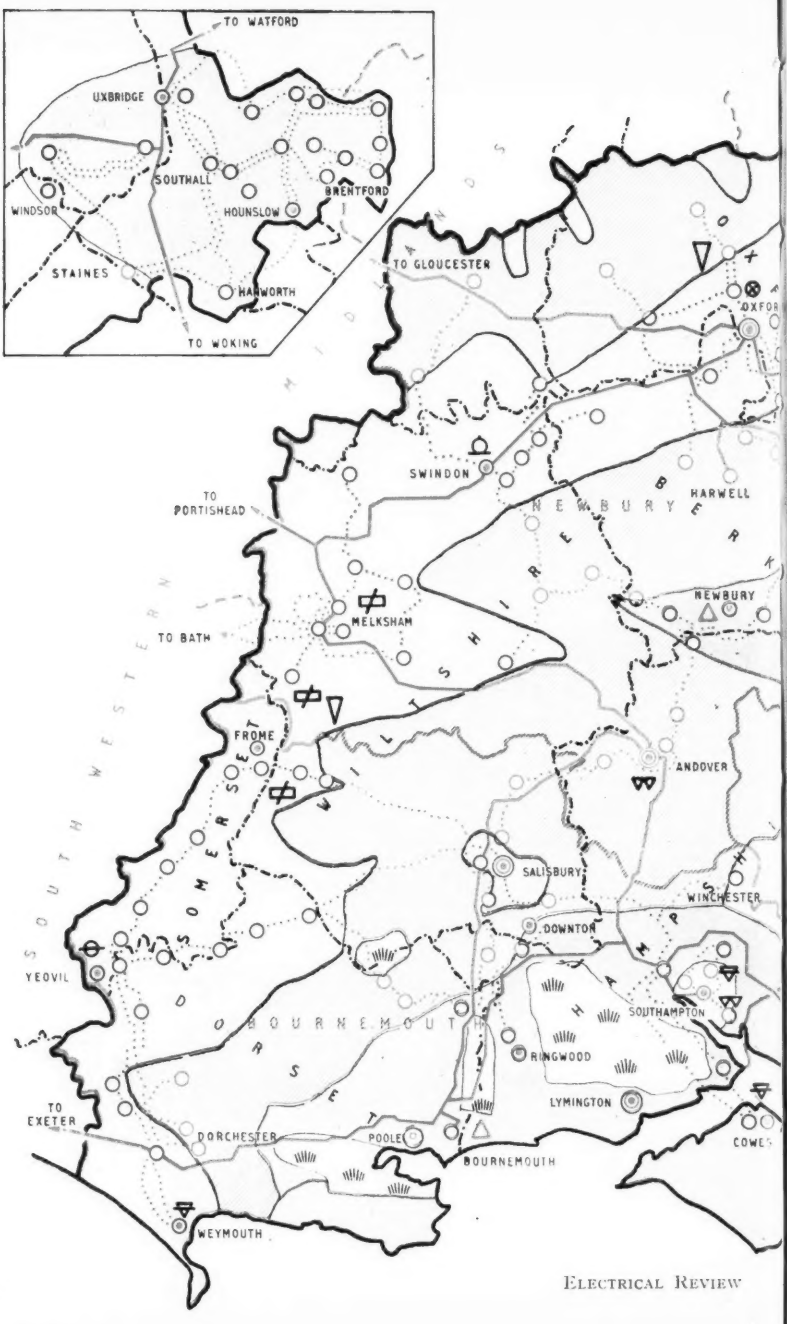
## 5. SOUTHERN AREA

THERE can be no two ways about the general background characterization of the Southern Area which, with its 6,596 square miles, may be said to be based on 90 miles of the central South Coast from Littlehampton in the east to a point in the west midway between Weymouth and Lyme Regis, for about 90 per cent of the Area is good-quality agricultural land. The westerly boundary runs roughly N.N.E. from the coast to near Cheltenham, the first part jointly with the South-Western Area to near Bath and then jointly with the Midlands Area. The boundary then takes a more easterly course to near Brackley, where the Area adjoins that of the East Midlands, and then it runs south-easterly to the London Area boundary near Wembley, adjoining the Eastern Area most of the way. It has a common boundary with the London Area for several miles and then breaks away and, skirting Woking and Guildford, the eastern boundary finishes up at Littlehampton.

Our estimate from a perusal of the Ministry of Agriculture and Fisheries "Types of Farming" map is that three-quarters of the Area is devoted to the cultivation of the soil while the remainder consists mainly of a belt about 10 miles wide roughly following the western boundary to near Tetbury and then taking an easterly course to the north-eastern boundary, which is styled "pasture—predominantly dairying."

The colour scheme, however, is rather different from the other outstanding agri-

**In looking around for the area highlights, Oxford, whose University offers so much of the richness of the past to the troubled present, comes first to mind** *(Aerofilm photo)*


TO WATFORD
UXBRIDGE
SOUTHALL
BRENTFORD
WINDSOR
HOUNSLOW
STAINES
HARWORTH
TO WOKING
TO GLOUCESTER
OXFOR
SWINDON
HARWELL
NEWBURY
BERKSHIRE
TO PORTISHEAD
MELKSHAM
TO BATH
NEWBURY
BASINGS
WILTSHIRE
FROME
ANDOVER
SOMERSET
SALISBURY
WINCHESTER
DOWNTON
HAMPSHIRE
SOUTH WESTERN
YEOVIL
SOUTHAMPTON
BOURNEMOUTH
RINGWOOD
DORSET
LYMINGTON
TO EXETER
DORCHESTER
POOLE
COWES
BOURNEMOUTH
WEYMOUTH

cultural area which we have already described, namely, the Eastern Area. Whereas in the latter case the principal colour represents arable production, here the predominating colour indicates "corn, sheep and dairying." The remainder comes under the "intermediate types" class, with a splash of general mixed farming in the extreme north, i.e., above the dairying belt, varied farming on mixed soils round about Newbury, Wokingham and Maidenhead, and again along the greater stretch of the South Coast, and mixed farming with substantial dairying in a tract of land from Winchester to Horsham. The only small part of the Area in the "arable production section" is in the south-east corner around Chichester.

The largest of a few patches representing land of no farming value is that

**This map, which has been specially prepared by the *Electrical Review*, aids in the electrical assessment of the Southern Area. It has a background based on the Ordnance Survey "Types of Farming" map**

**The areas shown white are unsuitable for farming, the grey background indicates a predominance of market gardening and small holdings, red arable and green pasture land. The grey tint to the inset indicates industrial concentration**

showing the New Forest which, however, must be one of the essential characteristics of the Southern Area. The only "principal urban" indications on this map are the small patches at Portsmouth and Southampton and a part of the projection in the north-east into the general "principal urban" area of Greater London.

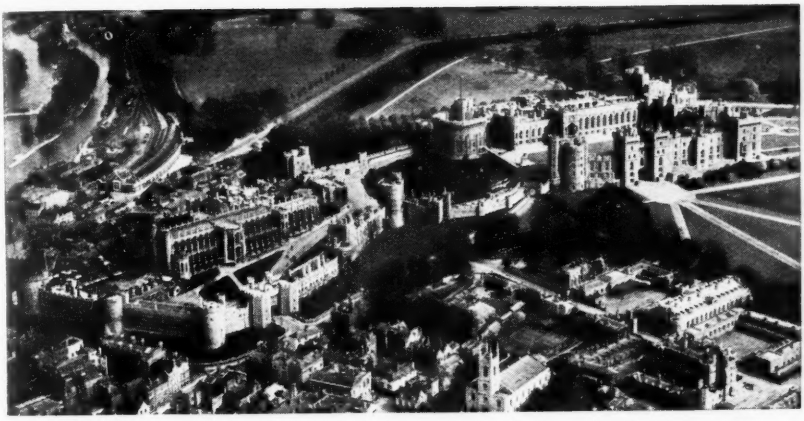
The general picture obtained from the land utilization map is of three sections through the Area roughly parallel from north to south. The western section is shown as predominantly meadowland, the centre section as principally arable land and the eastern section predominantly woodland. The main urban areas, apart from the industrialized north-east corner, are Chichester, Portsmouth, Southampton, Bournemouth, Salisbury, Swindon, Oxford, Reading, Aldershot, Basingstoke, Winchester, Andover and, to finish up at the almost exact centre of the Area, Newbury.

The main impression gained from the population density map is the overwhelming representation of the "dense rural" range, which indicates 50 to 400 persons per sq mile, and the extremely few indications of the "dense urban range," i.e., over 25,000 per sq mile. Of the five markings for the latter range, again apart from the north-east corner, there is a rough circle at Portsmouth which is about three miles in diameter, followed in declining order by Reading, Southampton, Salisbury and Weymouth.

In the "urban" range (6,400 to 25,000) there are areas adjoining the "dense urban" ones and others at Bournemouth, Aldershot, Oxford, High Wycombe, Henley, Maidenhead, Slough, Windsor, Uxbridge, Bognor, Chichester and Newbury. Again, in the next lower range, i.e., "suburban and industrialized rural" (400 to 6,400), there are markings for this around the higher ranges, plus indications for towns like Petersfield, Andover, Dorchester, Warminster, Devizes, Chippenham, Cirencester, Marlborough, Basingstoke and, surprisingly enough to us, Swindon.

All this ignores the Isle of Wight, but merely for ease of description. The north of the island is mainly dairyland and the south mainly mixed agricultural farming. Again, on the "Land Utilization" map woodland is prominent in the north and arable land in the south. The popula-

**The Southampton dockland district is one of the principal industrial parts outside the intense North East section**



**Windsor Castle is a "Southern" focusing point** (*Aerofilms photo*)

tion density portion is much the same as that for the mainland part of the Area, with the small areas of the "urban" range at Ventnor, Shanklin, Sandown, Ryde, Cowes and Newport.

To follow the Area boundary clockwise from Littlehampton we skirt the following pre-vesting-day undertakings:—Bognor District Electricity Co., Chichester Corporation, Portsmouth Corporation, Isle of Wight Electric Light & Power Co., Ltd., Southampton Corporation, West Hampshire Electricity Co., Ltd., Wessex Electricity Co., Milford-on-Sea Electric Supply Co., Ltd., Milton and Barton-on-Sea Electricity Supply Co., Ltd., Bournemouth Corporation, Bournemouth & Poole Electricity Supply Co., Ltd., Weymouth & Melcombe Regis Corporation, Portland U.D.C., Wessex Electricity Co. (from the coast following the area boundary right round to High Wycombe), High Wycombe Corporation, Metropolitan Electric Supply Co., Ltd., Uxbridge & District Electric Supply Co., Ltd., Heston & Isleworth Corporation, Brentford & Chiswick Corporation, Egham & Staines Electricity Co., Yorktown & Camberley Electricity Co., and Mid-Southern Utility Co

The former undertakings within this ring, including "islands" within the areas of some of the undertakings already mentioned, are as follows: Aldershot Corporation, Alton District Electricity Co., Ltd., Ascot District Electricity Co., Basingstoke Corporation, Blandford Forum & District Electricity Supply Co., Brentford Electric Supply Co., Ltd., Burford Electric Light & Power Co., Ltd., Dorchester Corporation, Ealing Corporation, Fareham U.D.C., Farnham Electricity Co., Maidenhead Corporation, Marlborough Corporation, Oxford Corporation, Petersfield Electric Light & Power Co., Ltd., Reading Corporation, Ringwood Electric Supply Co., Ltd., Salisbury Electric Light & Supply Co., Ltd., Slough & Datchet Electric Supply Co., Ltd., Swindon Corporation, Whitchurch Electricity Co., Ltd., Wilton Electricity Supply Co., Ltd., Winchester Corporation, Windsor Electrical Installation Co., Ltd., Witney U.D.C., Woodstock & District Electrical Distribution Co., Ltd. Two non-statutory undertakings in the Area are or were the Durrington Electric Light Co., Salisbury, and the Avebury undertaking, Marlborough.

Finally, in this attempt to define the Area we draw attention to certain similarities between this and two other Areas, Eastern and South-East Scotland, the largest and smallest of all the Areas except London, which affords contrasts in almost every aspect. These similarities are first in respect of the preponderance of "dense rural" population and arable land, although an important exception is the fair amount of coal mining additionally in South-East Scotland. The other comparisons we have in mind

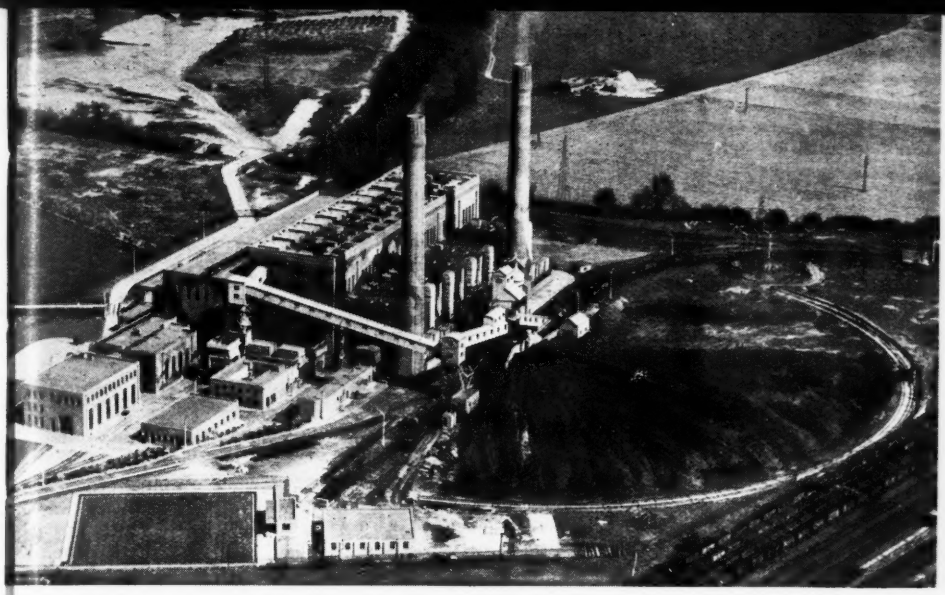
relate to populations, consumers and electricity consumed, but these figures should be read in conjunction with the relative sizes of the Areas. The Southern, Eastern and S.E. Scotland Areas have sizes of 6,596 sq miles, 7,849 sq miles and 3,312 sq miles, respectively. In the same order the population figures are 3.52 million, 4.7 million and 1.37 million; the consumer figures are 0.87 million, 1.18 million and 0.297 million; and the consumption figures (units sold 1947) are 2,300 million, 2,925 million and 719 million. We must emphasize that no special significance should be read into these comparisons outside the sphere of "area definition" in connection with which there is certainly a strong interest.

**GENERATING STATIONS OPERATED BY SOUTHERN DIVISION.**

| Station | Previous Owner | Type | Capacity installed MW | Effective "S.O." capacity MW | How operated, shifts per day |
|---|---|---|---|---|---|
| Andover ... ... | Wessex Electricity Co. ... ... ... ... | Diesel | 0.215 | 0.213 | One |
| Basingstoke ... | Basingstoke Corporation ... ... ... ... | Diesel | 2.91 | 2.31 | One |
| Cowes ... ... | I.W. Light & Power Co. ... ... ... ... | Steam | 13.0 | 11.0 | Three |
| Downton ... ... | Wessex Electricity Co. ... ... ... ... | Hydro and diesel | 0.15 | 0.139 | One |
| Earley ... ... | Owned C.E.B., operated by Edmundsons Corp. | Steam | 120.0 | 114.0 | Two |
| Farnham ... ... | Farnham Gas & Elec. Co. ... ... ... | Diesel | 0.3 | 0.297 | One |
| Farnborough ... | Mid Southern Utility Co.... ... ... ... | Gas | 0.875 | 0.668 | One |
| Frome ... ... | Wessex Electricity Co. ... ... ... ... | Steam | 2.35 | 2.26 | One |
| Godalming ... ... | Mid Southern Utility Co. ... ... ... | Diesel | 0.2 | 0.198 | One |
| High Wycombe ... | High Wycombe Borough Council ... ... | Steam | 3.5 | 3.26 | One |
| Hindhead ... ... | Mid Southern Utility Co.... ... ... ... | Diesel | 0.66 | 0.653 | One |
| Hounslow ... .. | Heston & Isleworth Borough Council ... ... | Steam and diesel | 5.0 | 4.87 | One |
| Lymington ... ... | Wessex Electricity Co. ... ... ... ... | Diesel | 0.56 | 0.554 | One |
| Newbury ... ... | Wessex Electricity Co. ... ... ... ... | Diesel | 0.5 | 0.495 | One |
| Oxford ... ... | Oxford City Council ... ... ... ... | Steam | 22.50 | 20.00 | Two |
| Portsmouth ... | Portsmouth Corporation ... ... ... ... | Steam | 110.0 | 105.0 | Two |
| Reading ... ... | Reading Corporation ... ... ... ... | Steam | 12.00 | 11.00 | Two |
| Ringwood .. ... | West Hants Elec. Co. Ltd. ... ... ... | Hydro and diesel | 0.165 | 0.147 | One |
| Salisbury ... .... | Salisbury Electric Light & Supply Co. (Edmundsons). | Steam | 3.10 | 3.00 | One |
| Southampton ... | Southampton Corporation ... ... ... | Steam | 78.0 | 75.0 | Two |
| Swindon ... ... | Swindon Corporation ... ... ... ... | Steam | 32.5 | 31.0 | Two |
| Sunninghill ... | Ascot & District Gas & Elec. Co. ... ... | Diesel | 0.48 | 0.475 | One |
| Uxbridge ... ... | Uxbridge & District E.S. Co. ... ... ... | Steam | 5.2 | 5.0 | One |
| Weymouth ... ... | Weymouth Corporation ... ... ... ... | Steam | 5.25 | 5.0 | Two |
| Yeovil ... ... | Wessex Electricity Co ... ... ... ... | Diesel | 0.795 | 0.787 | One |

There is probably no better way of generally characterizing such an area, after mentioning the richness of its soil, than looking around for some of the highlights. Oxford, whose University offers so much of the richness of the past to

**Godalming, midst some of the richest arable land, offers something particularly beautiful in the way of small townships**



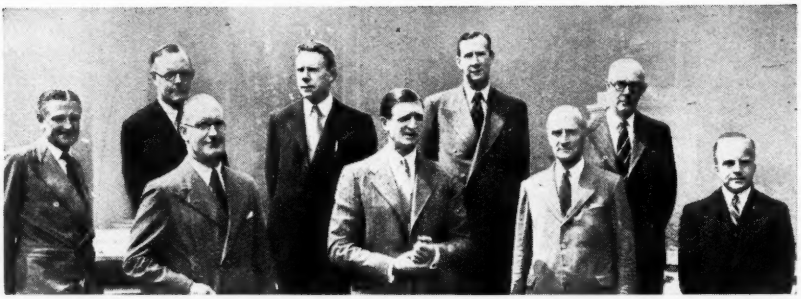
**The largest power station in the area—Earley—was the only one ever owned by the Central Electricity Board**

the troubled present, comes first to mind, but it contributes largely to automobile manufacturing as well. The great military centre of Aldershot also spells Southern England, as do Portsmouth, with its naval dockyard, and Southampton, where the largest ocean-going liners can be accommodated. Then there are Swindon, the great railway centre, and Reading which, although mainly residential, possesses the important agricultural college and is tending to become a national administrative centre. Winchester, once the capital of Wessex and later of England, together with places like Chichester and Salisbury, also contribute to the historical interest of the Area.

We think such Southern manor villages as Petworth and Arundel, each with its castle or manor house, church, old houses and small local industries, are a particular attraction to the Area. Godalming, amidst some of the richest arable land of the country, offers something particularly beautiful in the way of small townships, and a point of closer interest is its claim to be the first town in the country to have a public electricity supply which, according to an official brochure, was established in the year 1881.

We went to the area prepared to hear a good deal about holiday resorts on the South Coast. With the exception, however, of one large resort, namely, Bournemouth, and the Isle of Wight collectively, there are no outstanding seaside towns which enable the Area to be compared in this way with its neighbour, the South Eastern Area. The Area is a popular one for agricultural shows, and this year's events included the Agricultural Show at Oxford, the Royal Counties Show at Sonning, and the Hampshire Produce Show. Next year's Royal Show is to be held at Kidlington. A large number of smaller one- or two-day shows are held annually in the Area.

We believe this Area to be unique from the load distribution aspect. Excluding the railway load, 30 per cent of the demand on the public supply is concentrated in the north-eastern district around Southall and bordering the London Area. Further, practically the whole of this heavy loading, which represents a density of about 500 kW per sq mile, is devoted to industry. This is so very mixed that we have found it advisable to rely mainly on map stippling rather than on symbols. Generally, however, one might describe



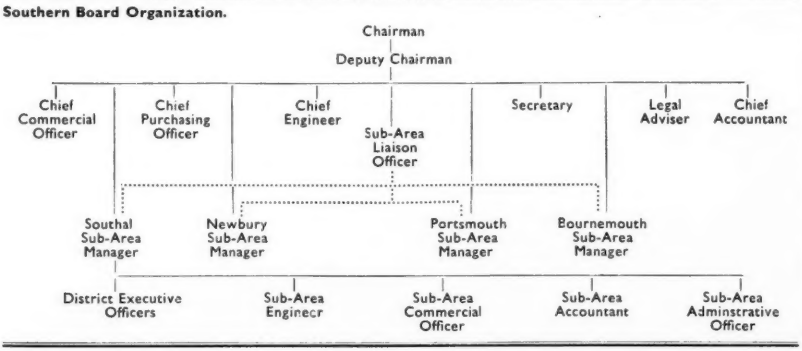
**Southern Board executive team. Front row, left to right: Messrs. H. Willott Taylor, R. R. B. Brown, H. Nimmo and F. W. Kempton. Back row: Messrs. W. B. Poulter, D. S. Cumberlege, R. Birt, G. Hicks, and R. B. Sully**

the industry as a concentrated mixture of light engineering and light general industry, with an outstandingly large heavy-industry factory here and there. An example of the latter is the large Firestone rubber factory at Brentford.

As we shall see soon in our load analysis the industrial load throughout the whole of the Area is only 32.4 per cent of the total load, again excluding the railway supply. This means, then, that the industrial load throughout 95 per cent of the area as a whole amounts to only a few per cent of the total load for the Area. Considered in conjunction with the following scattered industries, this gives a good indication of the general character—the railway shops at Swindon; automobile manufacturing at Oxford; food industry at Reading and Chichester; light engineering at Basingstoke; shipbuilding and dockside industries at Portsmouth, Southampton, Cowes and Weymouth; light engineering and general industries at Yeovil; cloth making around Warminster, Crowbridge and Melksham; flour milling at Andover; cement making at Shipton, near Oxford; and yacht building in the Isle of Wight. The following figures show, respectively, the m.d. and consumption of the Board's six largest consumers for the year 1947: 7,200 kVA, 32,950,600 kWh; 4,140 kW, 20,937,000 kWh; 3,450 kW, 18,613,000 kWh; 8,060 kW, 16,349,400 kWh; 7,950 kW, 14,499,000 kWh; and 4,294 kW, 14,069,438 kWh.

The unusual load distribution to which we have referred is reflected in the great differences in the sizes of the sub-areas, in connection with which we again draw attention to our map. The sub-area

**Southern Board Organization.**



populations and densities are shown in the following table:—

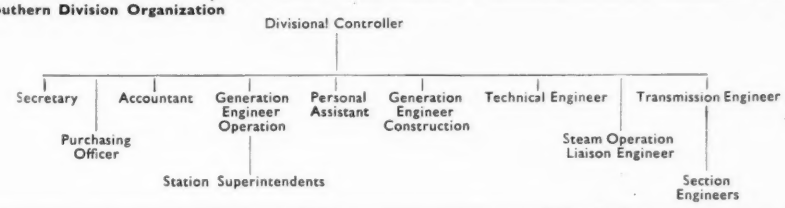
| *Sub-area* | *Population* | *Density (per sq mile)* |
|---|---|---|
| Southall .. | 947,000 | 2,668 |
| Newbury .. | 874,000 | 317 |
| Portsmouth | 810,000 | 622 |
| Bournemouth | 890,000 | 408 |
| Total .. | 3,521,000 | 533 |

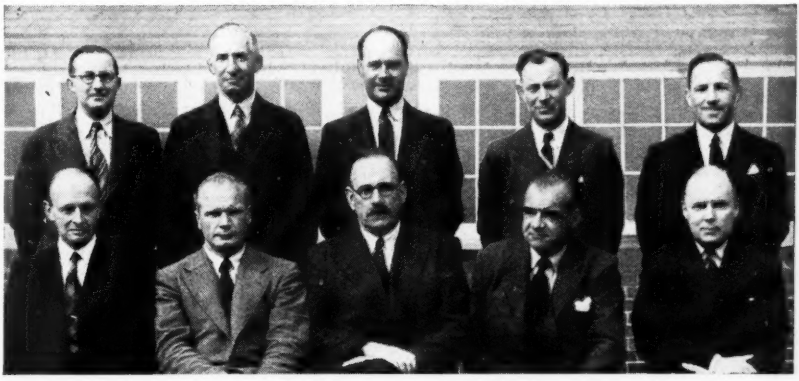
All told there are 875,300 consumers in the Area, which results in a consumer density of 133 per sq mile. In 1947 these consumers purchased 2,300 million kWh, and this consumption represented an approximate m.d. of 620 MW. These figures, however, do not include the railway load and consumption. The following load analysis, then, is in terms of percentages of the maximum kWh purchased, excluding the railway supply: domestic 47.3 per cent, industrial 32.4 per cent, commercial 19.3 per cent, and farm supplies 1 per cent.

The approximate total kWh generated in the Area in 1947 was 1,170 million. This means roughly that something like 1,130 kWh represents a net import into the Area for the same period, exclusive of the railway load. About one-third of the imported supply is taken from the London Area and consumed in the congested north-east corner of the Southern Area. The greater part of the Southern Area is contained in the South Western or Bristol grid control area, for which import and export figures were given in our survey of that Area in the *Electrical Review* of 10th June, 1949. We feel that to repeat them here may lead to confusion, but for a study from a specific viewpoint the figures are available as indicated.

Now for the railway load, in connection with which we emphasize again that although the following figures are inde-

**Southern Division Organization**



**Southern Division executive team. Front row, left to right: Messrs. P. D. A. Oliver, E. McCabe, R. H. Coates, C. W. A. Priest and E. R. Cooper. Back row: Messrs. E. W. Connon, R. H. Grafton, F. L. Harris, B. C. Pyle and P. Smith**

pendent of those already quoted they must be taken into account with the load analysis figures already given in order to obtain the true Area picture at which we are aiming. The Southern Area and its neighbour (South Eastern) are unique with regard to railway supplies. In the Southern Area bulk railway supplies are taken at Portsmouth, Wymering, Reading and Old Oak Common, Acton. The total railway supply m.d. and consumption, except for the Old Oak Common supply, for the year 1948/49 were 14,550 kW and 34.1 million kWh. Corresponding figures for the Old Oak Common supply were 9,758 kW and 40.5 million kWh.

A picture such as this must embrace some idea of the tariff position facing the new organizations. On Vesting Day there were in vogue 168 domestic tariffs, 129 commercial tariffs, 85 tariffs common to both domestic and commercial supplies, and six farming tariffs.

## Generating Capacity

With regard to generation, we present on page 604 a specially prepared schedule of the 25 stations taken over by the Southern Division. They have a total effective sent-out capacity of 397 MW. A study of the list brings to light some unusual aspects, and the following observations are of particular interest. The largest station is Earley, with an effective capacity of 114 MW, and this was the only generating station ever owned by the Central Electricity Board. Portsmouth station, with an effective capacity of 105 MW, is a very near second, while the third largest is Southampton, with an effective capacity of 75 MW. Eighteen of the stations have capacities below 10 MW, eleven stations have capacities below 1 MW, and the four largest stations have a total capacity of more than four times the aggregate of the other 21 stations. The smallest station in the area is the 0.15 MW Downton water and oil station.

The only new power station under construction is that at Poole, which is designed for an ultimate capacity of 200 MW and is likely to be in commission at the end of next year with an installed capacity of about 50 MW. It is expected that the three further 50 MW sets will be in commission within eighteen months of the first set. A further 30 MW extension is in hand at the Portsmouth station.

Major (grid) transmission throughout the Area embraces the following substations: Andover (15,000 kVA), Bournemouth (60,000 kVA), Chichester (40,000 kVA), Dorchester (45,000 kVA), Harwell (30,000 kVA), Melksham (90,000 kVA), Nursling (90,000 kVA), Southampton (40,000 kVA), Oxford (150,000 kVA), Reading (130,000 kVA), Salisbury (60,000 kVA), Swindon (30,000 kVA), Uxbridge and Wymering, Portsmouth (90,000 kVA). The major outgoing lines from the Area are to Brighton, Exeter, Gloucester, Portishead, Upper Boat, Watford, Willesden and Woking.

## Board and Division Administrators

The new organizations which will be responsible for the administration of public electricity supply in the Area are, of course, the Southern Electricity Board, with headquarters at Southern Electricity House, near Maidenhead, and the Southern Division of the British Electricity Authority, whose headquarters are at British Electricity House, High Street, Portsmouth. The accompanying tree diagrams show the working structures of these organizations, and the leading executive teams are as follows: Southern Electricity Board: Chairman, Mr. H. Nimmo; Deputy Chairman, Mr. R. R. B. Brown; Chief Commercial Officer, Mr. W. B. Poulter; Chief Purchasing Officer, Mr. R. B. Sully; Chief Engineer, Mr. H. Willott Taylor; Sub-Area Liaison Officer, Mr. R. Birt; Secretary, Mr. F. W. Kempton; Legal Adviser, Mr. D. S. Cumberlege; and Chief Accountant, Mr. G. Hicks.

Southern Division: Divisional Controller, Mr. R. H. Coates; Generation Engineer (Operation), Mr. E. McCabe; Generation Engineer (Construction), Mr. C. W. A. Priest; Transmission Engineer, Mr. R. H. Grafton; Technical Engineer, Mr. E. Connon; Divisional Accountant, Mr. E. R. Cooper; Divisional Secretary, Mr. P. D. A. Oliver; System Operation Liaison Officer, Mr. F. L. Harris; and Divisional Purchasing Officer, Mr. P. Smith.

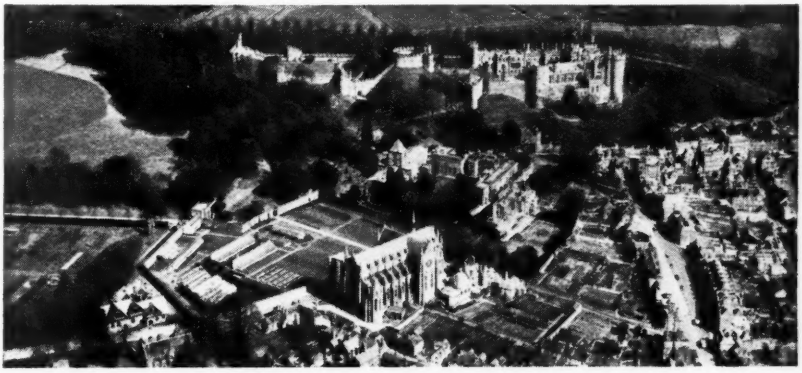
What of the future? We think the first and foremost answer to this lies in the following facts. We have already shown that the greater part of the Area

consists of some of the richest farming land in the country. Our load analysis indicates that only 1 per cent of the total consumption within the area (excluding the railway load) is devoted to farming. Out of a total of 20,000 farms in the Area 10,000 remain to be connected to the system. Considerable encouragement, at the moment, is being given by the Government to further intensification of farming. The Board is connecting about 100 farms per month.

Industrially, there is the projected cement works at Westbury and, finally, apart from the reasonable expectation of industrial development arising out of the present-day tendency to disperse a fair amount of light industry into the rural areas, there are the many rural industries dependent upon the state of the agricultural development in their area.

At the disposal of existing and future consumers are the following showrooms or service centres arranged under sub-area and county headings for convenience:—*Southall Sub-Area: Berkshire*—Bracknell, Maidenhead, Sunninghill, Windsor, Wokingham. *Bucks*—Slough. *Middlesex*—Acton, W.3, Chiswick, W.4, Ealing, W.5, Feltham, Greenford, Hanwell, W.7, Hounslow, Southall, Sunbury-on-Thames, Uxbridge. *Surrey*—Staines, Camberley, Chobham, Egham. *Newbury Sub-Area: Berks*—Abingdon, Didcot, Faringdon, Hungerford, Mortimer, Newbury, Pangbourne, Reading (2), Wallingford, Wantage. *Bucks*—High Wycombe, Marlow. *Gloucester*—Cirencester, Tetbury. *Hants*—Andover, Whitchurch. *Oxfordshire*—Bicester, Burford, Charlbury, Chipping Norton, Headington, Henley, Oxford (2), Witney, Woodstock. *Wiltshire* — Bradford-on-Avon, Calne, Chippenham, Corsham, Devizes, Highworth, Malmesbury, Marlborough, Melksham, Pewsey, Swindon, Trowbridge, Westbury, Wootton Bassett. *Portsmouth Sub-Area: Hants* — Aldershot, Alresford, Alton, Basingstoke, Cosham, Fareham, Farnborough, Fleet, Gosport, Havant, Hayling, Lee-on-Solent, Petersfield, Portsmouth (3), Southsea, Waterlooville. *Isle of Wight*—Cowes, Freshwater, Newport, Ryde, Sandown, Shanklin, Ventnor. *Surrey*—Farnham, Godalming, Haslemere, Hindhead. *Sussex*—Bognor Regis, Chichester, Petworth. *Bournemouth Sub-Area: Dorset*—Blandford, Dorchester (2), Parkstone, Portland, Shaftesbury, Sherborne, Swanage, Wareham, Weymouth, Wimborne. *Hants* — Bishops Waltham, Bournemouth (2), Eastleigh, Lymington, Lyndhurst, New Milton, Ringwood, Southampton (3), Swaythling, Winchester. *Somerset* — Frome, Yeovil. *Wilts*—Amesbury, Downton, Salisbury City, Salisbury Rural, Warminster.

We are indebted to Mr. Nimmo and Mr. Coates for their co-operation and to their principal officers for help during our investigations.



**Arundel—one of the beauty spots of the area**

# E.D.A. Conference

## TOPICS DISCUSSED AT BRIDLINGTON LAST WEEK

THE subjects dealt with at last week's three-day autumn conference organized by the British Electrical Development Association were particularly well chosen and covered a variety of up-to-date topics. "The Organization and Operation of an Electrical Contracting Department" was the subject of the first paper, presented by Mr. W. H. Burton (No. 3 Sub-Area, Yorkshire Electricity Board) and Mr. C. W. Chandler (No. 1 Sub-Area, Y.E.B.), who stressed that such a department should be organized on sound business lines, efficiently administrated as a separate department and its costs borne in full.

The department should be under the control of an engineer who had an intimate knowledge of the contracting industry. His assistants should preferably be qualified engineers, but this was not essential provided that they had considerable experience of contracting. The engineers would usually become specialized according to the type of work and whilst a tendency to over-specialization was to be avoided, specialist knowledge should be utilized by one engineer assisting another when necessary. They should be fully conversant with conditions of supply, tariffs, etc. and modern practice to enable them to advise consumers on general questions outside the scope of pure contracting work. With regard to clerical staff a ratio of two clerks to 30 or 40 electricians appeared to be a fairly average figure.

Although chargehands would be permanent in some cases, the authors considered that the appointment of temporary chargehands was a very useful measure as it was an incentive to the man and led to efficiency and economy.

### Costs and Charges

Dealing with "The Economics of Electricity Supply," Mr. Dennis Bellamy (manager, No. 6 (Hull) Sub-Area, Y.E.B.), after surveying the economic factors of history and legislation, summarized the advantages and disadvantages of large-scale production and organization. He pointed out that the economics of electricity supply were entirely different from the normal, since once the demand was made for electricity, the supply must be available for the consumer, even though he had no desire to use it at the time. The use of electricity, too, was very diverse and the cost of supplying varied with this diversity, with the result that the particular class of use controlled the cost of supply and also that the cost of supply for any particular class was bound to be affected by its relationship to other classes of use. Temporary measures could not be employed to cope with a peak demand.

To meet these conditions capital outlay must be put into large units of productive plant and equipment and an extensive permanent network of distributive equipment, which had an effective life of not less than twenty years. The full cost thereon must be borne continuously, irrespective of the volume of the demand and the extent of the use by the consumer. The administrative structure, therefore, was first a cost expense allocation system, determined by the knowledge of the supply and demand problem, to provide the necessary data for practical application. Mr. Bellamy then dealt with the application of costs to tariffs and the determination of price and form of tariff. Statistics were given comparing the relative merits of different fuels for heating purposes and the paper concluded with appendices on the economic factors of the 1947 Act, expense allocation and costing analysis.

### Opportunities in the Catering Business

In their paper on "Electricity and the Catering Industry," Mr. F. D. Parker (Wear Sub-Area, North Eastern Electricity Board) and Mr. E. H. Jordan (Tees Sub-Area, N.E.E.B.) traced the probable effect of recent developments in the catering industry on potentialities for the use of electricity in this important field. They declared that the Catering Act, 1943, together with its more recent amendments regulating wages and conditions in the various departments of the catering industry, must inevitably result in the reorientation of ideas in regard to the use of labour-saving equipment. Equally far-reaching in its possible effect was the Civic Restaurants Act, 1947, enabling local authorities to operate catering establishments on a fully competitive basis. Increased emphasis on hygiene and cleanliness in the catering industry was a further argument for the use of electricity.

To indicate the potentialities of electricity, the authors examined three types of installation, each possessing its own special characteristics—a small hotel, a civic restaurant and a hot water installation for bar sinks in licensed premises. Information obtained from actual experience was included covering equipment used, the layout of the installations, and costs.

# Submarine Power Cable

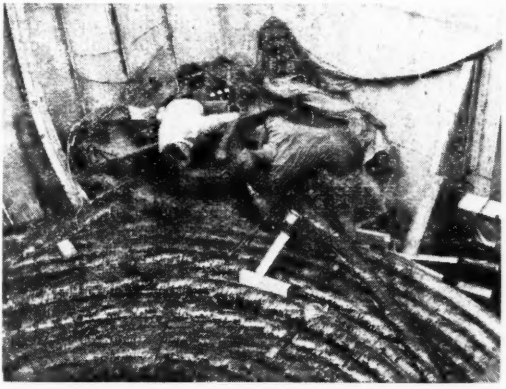
## *Link Between Isle of Wight and Mainland*

AN extension of the power grid system was inaugurated on 19th August by the laying of a 33 kV cable across the Solent on behalf of the British Electricity Authority.

The underwater section, extending from Gurnard in the Isle of Wight to Lepe on the Hampshire mainland, is jointed at each end to land cable, thereby connecting the generating station at Cowes with the Lepe substation and thence through overhead line to the switching station at Nursling, near Romsey. The land cable for connecting the Isle of Wight power station with the Gurnard shore end, a distance of approximately 2.7 miles, had previously been laid and jointed by Siemens Brothers & Co., Ltd., and includes a short submarine cable section across the River Medina.

This is the second submarine cable of this type to be manufactured and laid in one length by Siemens Brothers across this stretch of water; the first has been in satisfactory operation since 1947. The latest cable is unique in that it is the largest three-core 33 kV cable ever installed in this country, the overall diameter of the rocky shore section at Gurnard, which is double wire armoured, being approximately 6in and its weight 132 lb/yd. The total length supplied for the contract was 2.9 miles and it weighed 220 tons.

**The "David M" beached on the foreshore at Lepe having paid out the main cable**



**Cable coiled in ship's hold**

The cable is of the separate lead-cased single-core construction; it was processed in long sections and special factory joints, designed by Siemens technicians, were made to enable the complete cable to be coiled down and finally armoured in one continuous length. A cable of this size and weight needs hauling and coiling equipment outside the range of normal manufacture, on account of the increased pulling strain required and

greater head room for satisfactory coiling. Such a cable, for example, must have a bending radius of not less than 4ft 6in, which means 9ft diameter for all hauling wheels and sheaves round which the cable has to pass.

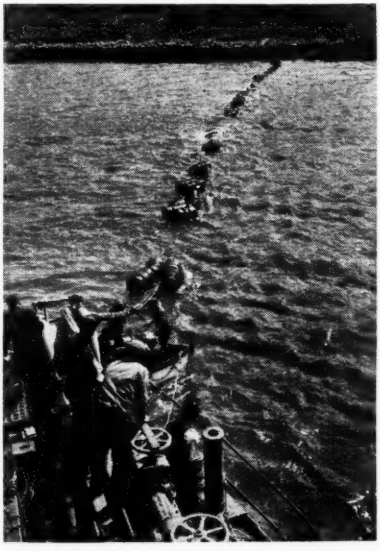
On completion, it was coiled down in the open outside the main power cable shop and was taken into the hold of the laying ship at the wharf-side by overhead gear, comprising a jackstay carrying a number of large fairleads stretched between steel towers.

Continuous tests were made on the cable during the course of manufacture and also while shipping and laying. For the purpose of obtaining technical data with respect to future developments, a number of gamma-ray photographs were taken of the cable at selected points. This work was carried out by officials of the National Physical Laboratory.

For the laying operation, a motor-driven coasting vessel of 350 tons, the "David M" owned by Metcalf Motor Coasters, Ltd., of a length of 137ft, beam 25ft and 9¾ft draught, was chartered and converted in a few days by Siemens engineers working at the riverside quay of the Woolwich works. Above both hatches special steelwork quadrants of rollers were fitted to ensure the large bending radius necessary for the cable on leaving the ship's hold. The brakegear, measuring wheel and stern sheaves were bolted and welded to the deck structure of the vessel.

Early on the morning of the 19th August work was started at the Gurnard shore end, the cable ship being anchored about 200 yards from the beach with two tugs in attendance to prevent her swinging with the strong tidal current. The cable was pulled by means of a self-anchoring 20-ton power unit on the cliffs, the end being floated ashore by the attachment of numerous barrel buoys—176 of them in all were used.

By early afternoon sufficient cable had been drawn up over the cliffs to the terminating kiosk and, when all gear and personnel had returned aboard, preparations were made for the main lay across the Lepe along a line of marker buoys previously laid down to denote the proper course. It was now high tide and soon after 6 p.m. the ship got under way with one tug ahead and another bridled on the starboard quarter. The cable paid out very smoothly and the ship, keeping a steady course, arrived off the mainland position soon after 7.30 p.m. and was beached well up on the foreshore at the high tide, remaining there all night. Next morning the cable was taken ashore on the bight and a length of about 300 yards, required to meet the land line from the Lepe substation, pulled from the ship; the cable was then cut and sealed.



**Shore end operations at Gurnard with fast-running incoming tide**

In addition to the engineers of Siemens Brothers who were responsible for the job, representatives of the British Electricity Authority and its consulting engineers, Kennedy and Donkin, were present to watch the operations.

On 19th September the final tests were satisfactorily carried out and the cable will shortly be put into service.

Preliminary surveys for both submarine cables were undertaken by Siemens Brothers who maintain a separate branch of their Outside Contracts Department to deal with special installations of this kind.

# Correspondence

## Managerial Grades

I CANNOT let your editorial with the above title in last week's issue go unchallenged being, as it is, only one side of the story imparted to you by some person who has exceeded the bounds of confidence apparently in an endeavour to prejudice the position of this Association.

The subject is not one at this step for a public wrangle and at the appropriate time my Executive Committee will doubtless reveal the whole story to the industry and until then I suggest your readers should take your comments with a "grain of salt" particularly, as is usually the case, the sting is in the tail.

Especially would I add that, in my opinion, it is not in accordance with the high tradition of the *Electrical Review* to publish such a statement without any attempt whatsoever to ascertain the other side of the story or verify its accuracy.

As an instance you say that the E.P.E.A., acquiesced in the formation of the A.M.E.E. As the one mainly responsible for the formation in 1918 of the Associated Municipal Electrical Engineers for Great Britain and Ireland I am in a position to deny such statement with all the emphasis at my command.

I refrain from further comment until *full* details of all that has transpired can be published.

F. W. PURSE,
*Assistant Hon. Secretary,*
Association of Managerial Electrical Executives.
*London, S.W.*1.

[In accusing us of unfairness Mr. Purse is himself unfair. There is no question of our having persuaded anybody to "exceed the bounds of confidence." We added nothing in the way of facts to what has already been publicly stated by the Electrical Power Engineers' Association recently or is common knowledge. Moreover, we did, in fact, ascertain the other side of the story before dealing with the subject.

As to the relationship of the E.P.E.A. with the original A.M.E.E. our statement read: "In the past, the E.P.E.A. says, it acquiesced in the formation of the A.M.E.E." This was a fair paraphrase of a statement in the September *Electrical Power Engineer.*

**Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for the opinions expressed by correspondents**

We do not think that the airing of a matter of great practical interest to many readers is entrance into a "public wrangle." If the A.M.E.E. feels that the case as presented does not do it full justice it should state its views now and not when the whole matter has been forcibly settled, leaving the power engineers with a grievance.—EDITORS, *Electrical Review.*]

## London Transport and Devaluation

DEVALUATION of the pound will, in the near future, no doubt increase the price of fuel oil from dollar areas. As this commodity is consumed in large quantities by passenger transport undertakings it would be interesting to know whether the dollar crisis will affect the conversion of trams in South London to fuel-oil bus operation.

The reasons given by the then L.P.T.B. for its decision were as follows: (i) The differentials in wages and conditions of crews which made trolley-buses substantially cheaper to operate than buses were declining. (ii) The redistribution of population, the railway plan and the future major changes in traffic flow in London would need the flexibility afforded by fuel-oil buses as compared with the fixed route trolley-buses. (iii) The standardization of one type of passenger vehicle—the "RT" type.

Does not the present, and possibly continuing, dollar shortage put the trolley-bus in a stronger position in the long run? It will be noted from the recent annual reports of undertakings that trolley-buses can be operated at a profit.

A. D. DIX, Graduate I.E.E.
*Lee, S.E.*12

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## Library for Scottish Board

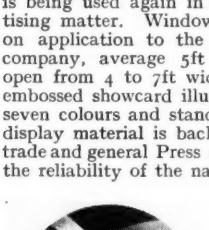
THE North of Scotland Hydro-Electric Board has been presented with a library of technical books by Mr. and Mrs. John Hathaway, of Buntingford, Herts, in memory of their son, Mr. Henry Hathaway, a chemical engineer, who was killed in 1944.

# Lamp Publicity

## FURTHER ARRANGEMENTS FOR THE NEW SEASON

HITHERTO, in the electric lamp field the brand name "Metrovick" has been applied to discharge lamps only, but the METROPOLITAN-VICKERS ELECTRICAL CO., LTD., has decided to extend its use to all types of lamps, whether metal filament or discharge. As existing stocks of lamps are exhausted the new issues and their protective wrappers and cartons will bear the one name "Metrovick" only.

The slogan "When daylight fades . . ." is being used again in this season's advertising matter. Window displays, available on application to the local offices of the company, average 5ft overall height and open from 4 to 7ft wide. The attractive embossed showcard illustrated is printed in seven colours and stands 18in high. This display material is backed up by extensive trade and general Press advertising in which the reliability of the name "Metrovick" is linked up with the lamp product. New publications available shortly include a




**Embossed "Metrovick" showcard in seven colours**

street lighting brochure, an industrial fittings catalogue and a brochure dealing with hospital lighting. Already available is a comprehensive catalogue of all types of "Metrovick" lamps, and a pin-up price folder which includes details of purchase tax on all the lamps in general use. Details of infra-red industrial lamps are given in a special booklet and illustrated leaflets. All fluorescent lighting fittings are shown in a fully illustrated price folder.

The existing range of attractive lamp sales aids of EKCO-ENSIGN ELECTRIC, LTD., including showcards, streamers, stickers and posters, has been extended for the coming season with a series of colourful window and counter cut-out showcards. These are litho productions in full-colour. The larger of them, showing a girl model with an Ekco tungsten lamp, measures 22in high by 18in wide, while two smaller cards (14in high by 10in wide) show a schoolgirl and schoolboy. Facial expressions are used to convey the theme "Ekco lamps are good—it's easy to see," with all lettering other than the trade name omitted.

Fluorescent lighting products are also catered for by three neat showcards stressing industrial and decorative fittings and the

**Ekco-Ensign lamp cut-out showcard**

Ekco - Ensign lighting advisory service. Throughout the range of material available for dealers the accent is on strong, forceful colours. There is also a large selection of well-produced illustrated literature covering tungsten lamps and fluorescent lamp fittings and control gear. In addition to supplying material, the Ekco-Ensign publicity service advises dealers on suitable layouts and designs on request, as well as providing a free window dressing service.

The theme "Next time I'll get an Atlas" is being presented by THORN ELECTRICAL INDUSTRIES, LTD., in a new form in this season's advertising campaign for "Atlas" lamps. Character drawings by a popular artist are used to depict typical situations in which the resolution is made. Advertisements in national and provincial papers and

**One of the "Atlas" character drawings**

periodicals are being supplemented by posters on special outdoor sites on main roads throughout the country. New showcards, posters and other display items are being issued.

# Commerce and Industry

## Cable Making Wages Award
## Non-Ferrous Metal Prices

IN July a Conciliation Committee of the Joint Industrial Council for the Electrical Cable-Making Industry considered an application by the employees' side of the Council for an advance of 5s a week for all adult workers, with proportionate increases for juniors. It was not found possible to settle the dispute by conciliation, and the matter went to arbitration. At a meeting of the Joint Industrial Council on 20th September it was agreed to accept the award of the arbitrator granting an increase of 2s 9d a week for all adult male and female time workers, with proportionate increases for those below adult age. This also applies to employees engaged on incentive systems based on the time workers' rate of pay. The arbitrator decided that there should be no alteration in the rates of pay for piece-workers. The revised rates date from the beginning of the first pay week in August.

### Colour Matching Lamps

In a move towards the adoption of standard inks by colour printers for four-colour letterpress process work, a demonstration was held on 22nd September at the British Standards Institution in collaboration with the British Federation of Master Printers. The lighting of the room was carried out entirely by means of "Osram" colour matching lamps and cold cathode tubes by arrangement with the General Electric Co., Ltd.

The display boards on which the colour proofs were exhibited were lit by 9ft cold cathode colour matching tubes in three-lamp fittings. General lighting of the room was carried out by "Osram" 5ft colour matching lamps installed for the occasion in existing fluorescent fittings. These lamps were of the hot cathode type, and their use demonstrated how advantage can be taken of the special "North sky daylight" quality of the "Osram" colour matching lamp without any alteration to fittings and gear already installed.

### Experimental Kitchen

One of the most comprehensively electrically equipped kitchens we have seen was officially opened last week at the Hampstead residence of Miss Elizabeth Craig, the well-known cookery expert. It will be used for testing any products or equipment sent to Miss Craig for her approval and also for photographic and advertising purposes. Pictures for a 550,000-word cookery book which Miss Craig is now preparing will be taken there.

Although a certain amount of gas apparatus is included in the kitchen the equipment is predominantly electric, the British Electrical Development Association and electrical manufacturers having given extensive co-operation. Three types of cooker are available, Moffat and Jackson standard types and a Jackson "Giant" table model.

**Miss Elizabeth Craig's experimental kitchen**

In addition there are a Stokes table cooker, an S.L.R. waffle iron, a Morphy-Richards toaster, a Premier plate warmer, Premier

and Bescal kettles, a number of pressure cookers, a "Kenwood" mixer, an English Electric refrigerator and a set of special saucepans (Hague & McKenzie).

For laundry work there have been provided a Hotpoint washing machine, table ironer, clothes dryer and hand iron; an H. Fisher (Oldham) drying cabinet and a Morphy-Richards hand iron. Hot water for a downstairs cloakroom is supplied by a "Sadia" water heater and space heating is provided by Hurseal oil-filled radiators and panels. In addition to a wall clock, Smith's English Clocks, Ltd., have provided a minute timer. Fluorescent lighting comes from attractive louvred British Thomson-Houston Co. fittings.

## Electrodepositors' Technical Society

A conference arranged by the Electrodepositors' Technical Society is being held at the Grand Hotel and the James Watt Memorial Institute, Birmingham, on 4th October, when the programme will include a symposium on "The Influence of the Surface Condition of Metals on Electrodeposits."

The annual dinner-dance of the Society will be held on 22nd October at the Hyde Park Hotel, Knightsbridge, London, S.W.1.

## Hotpoint Displays

Several new display pieces are now available from the Hotpoint Electric Appliance Co., Ltd. Showcards printed by the four-colour screen process deal with the company's vacuum cleaner and the new "Torribar" kettle; incidentally, the latter is now being introduced to the public in a window display at Crown House, Aldwych, London. A "Plus-Five" iron display is printed on hard board with a solid constructed hinged base covered with multi-coloured dress

**Hotpoint showcard introducing the new "Torribar" kettle**

material. This base serves as a stand for the iron and represents part of an ironing board with a garment.

A Hotpoint portable electric clothes dryer display produced by the ten-colour screen process, can be used with two or three dryers in open and closed positions around it, for either windows or showroom.

## Communal Electric Laundry

On 17th September Mrs. C. R. Attlee, wife of the Prime Minister, opened Bentham Court, a block of 134 flats in Essex Road,

**Mrs. C. R. Attlee inspecting a washing machine in the communal laundry at Bentham Court, Islington**

Islington. Our illustration shows Mrs. Attlee inspecting one of the washing machines which have been supplied for the communal laundry by the English Electric Co., Ltd.

## Ericsson-Pye Agreement

Ericsson Telephones, Ltd., and Pye, Ltd., have announced the signing of a working agreement which will allow each company to handle in future only the type of work in which it specializes, thus ensuring increased efficiency and economies. The two companies will pool their technical, engineering and manufacturing resources as well as their very wide contacts in a serious effort to capture valuable world markets.

Besides its domestic radio and television interests, Pye, Ltd., has export, installation and servicing branches in all countries for communication products, while Ericsson Telephones, Ltd., has similar organizations for dealing with telephone, cable and all types of land-line installations.

## 1950 B.I.F. Catalogue

Because of the paramount importance of dollar exports, the organizers of the British Industries Fair have decided to increase the circulation of both London and Birmingham sections of the 1950 B.I.F. catalogue and to divert extra supplies to North American markets. The catalogue will number over 1,000 pages. It will be published in two editions — advance and final—and will be distributed through 180 United Kingdom

Government posts in sixty-three countries. Distribution of the advance edition will take place a month earlier than in previous years, and first consignments will be flown overseas at the end of January.

## Lamp Carton Experiment

To demonstrate the shock-absorbing qualities of a new type of carton made by John Waddington, Ltd., Wakefield Road, Leeds, sixty-four electric lamps were dropped from an aeroplane at 2,500ft over Yeadon Airport on 20th September. Only one was damaged—but even then the glass remained intact. Fifty-two were dropped singly and the remaining dozen in two cartons of six (the Americans sell lamps in half dozens).

The carton is made from a single piece of thin cardboard, and interlocking flaps meet round the neck of the lamp to hold it firmly in the centre. The top of the bulb rests against four small shock absorbers; the rest of its surface makes no contact with the carton at all. The cartons can be manufactured at the rate of 36,000 per hour.

## New Non-ferrous Metal Prices

Following upon the devaluation of sterling against dollars, the Ministry of Supply has announced increased prices for non-ferrous metals. The price of electrolytic copper has been raised from £107 10s to £140 a ton; good soft pig lead from £87 5s to £122 a ton; aluminium (99 to 99.5 per cent) from £93 to £112 a ton; tin from £569 to £750; and zinc from £63 10s to £87 10s a ton.

## "Wireless World" Diary

The *Wireless World* Diary, 1950, published by Iliffe & Sons, Ltd. (price 3s 4½d) contains 80 pages of reference material, plus the usual diary pages of a week to an opening. It is bound in imitation leather. In addition to formulæ and other data widely useful in the design and maintenance of radio equipment, there are general reference pages giving a summary of existing regulations affecting the wireless user (including a page on the new Wireless Telegraphy Act) addresses of radio organizations, etc. Apart from the general revision of the reference pages, the valve base tables have been entirely re-done, and connections for over 500 valves are now given in more convenient form. Data for television and extra-short-wave aerials has been revised to meet the projected new B.B.C. services. All copies are now in the hands of stationers and booksellers and the publishers cannot fulfil individual orders.

## Naval College Lighting

The Royal Naval College at Dartmouth is an example of the manner in which fittings for fluorescent lamps can be designed to be in keeping with the tradition of famous buildings. In planning this installation the Fittings Department of the General Electric Co., Ltd., collaborated with the Admiralty departments concerned. It was desired that the fittings on the quarter deck of the College should be reminiscent of the poop lanterns used in old-time warships, and in conjunction with the Admiralty a pattern was evolved which combines lighting practice with the appearance of the lantern's prototypes.

Two styles of lantern were necessary, a bracket type and a lantern for suspension from the roof. Both have black bronze finished metalwork and champagne-tinted

**Quarter deck lighting at Dartmouth Naval College**

glazing. In the one suspended lantern which hangs from the vaulting at one end of the quarter deck there are twelve 3 ft 30W "Osram" warm-white lamps arranged vertically round a central gear compartment. The lantern is approximately 5 ft 9 in deep and is supported by a tubular suspension. The six bracket lanterns each contain six 2 ft 40W warm-white lamps and are similar in style to the suspended lantern.

Tungsten lighting is blended with the fluorescent on the quarter deck. The lamps are mounted in circular fittings. A design in keeping with the quarter deck lanterns has been used for the standard fittings mounted on the stone balustrading at the top of the steps leading to the terrace in front of the college. The library and most of the classrooms at the College are equipped with "Osram" fluorescent lamps in

G.E.C. fittings of special or standard designs.

Dartmouth College took early advantage of the relaxed restrictions on floodlighting and the installation comprises "Osram" red floodlighting lamps of the hot-cathode neon-filled type, a yellow light being obtained from sodium lamps. By the combination of red and yellow lighting the desired contrast between the brick frontage and the stonework facings of the windows has been effectively preserved.

## Lighting of Trafalgar Square Fountains

In connection with the illumination of the fountains in Trafalgar Square, London, Hamilton & Co. have specially manufactured wide-radius circular fluorescent tubes to the order of the Ministry of Works and have also provided the necessary control gear. Four 80 W "silver daylight" or "natural" tubes, bent to a radius of 7ft 6in make up a circle.

## Theatre Lighting at Film Ball

The new "Atlas" coloured fluorescent theatre lighting was used with remarkable effect at the *Daily Express* Film Ball at the Albert Hall on 21st September. There was

**Miss Gracie Fields operating the "Atlas" theatre lighting console at the Film Ball**

a specially designed control console from which Thorn Electrical Industries' lighting engineers maintained ever-changing patterns of coloured light. The installation consisted of thirty 4-colour fluorescent floats and six 4-colour wing floods. The total load only amounted to 10 kW and it was estimated that 75 kW of incandescent lighting would have been needed for the same area. The control board was equipped with twenty-four dimmer handles, each controlling three complete twin-tube circuits. The smoothness of the dimming was especially notable and remarkable colour changes were effected by blending at varying levels the multi-coloured tubes employed. A special feature of the equipment is that complete black-out can be effected and lighting can be restored instantaneously at any level of illumination.

## Broadcasting Committee

The Broadcasting Committee, under the chairmanship of Lord Beveridge, which was set up early this year by the Lord President of the Council and the Postmaster General, will start holding meetings to hear oral evidence in the middle of October. These meetings will be held in private at the Committee's offices, 1, Chester Street, London, S.W.1. The Committee's terms of reference are: "To consider the constitution, control, finance and other general aspects of the sound and television broadcasting services of the United Kingdom (excluding those aspects of the overseas services for which the B.B.C. are not responsible) and to advise on the conditions under which these services and wire broadcasting should be conducted after the 31st December, 1951."

## Midlands Ideal Home Exhibition

The Midlands Ideal Home Exhibition was opened at Bingley Hall, Birmingham, on Wednesday and will continue until 22nd October. A special section deals with labour-saving devices.

## National Supply Survey

In No. 4 of this series dealing with the South Eastern Area (*Electrical Review*, 16th September) a rough indication of the magnitude of the non-industrial load in the Area is given in p. 508. The figures quoted are the actual numbers of consumers of these classes and not the load in kW, as printed in the article.

## Television Aerials

In collaboration with R.J.S. Services, Ltd., Stoke-on-Trent, Belling & Lee, Ltd., recently held a cocktail party, luncheon and demonstration for 130 dealers from the surrounding districts at the Ash Hall Hotel, Stoke. Mr. E. M. Lee, B.Sc., M.I.E.E., led the discussion on the possible and probable applications of both elaborate and simple forms of television aerials, and the guests saw, for the first time, a television programme from Alexandra Palace received on the new Belling-Lee "Multi-Rod" array, at a range of 130 miles from the transmitter (actually an array will not be required in the Stoke-on-Trent district for reception from Sutton Coldfield). A demonstration was also staged showing the effect of suppression of interference from a motor car and con-

siderable interest was shown in the Belling-Lee mobile television aerial research van.

## Northern Ireland Strike Ends

After being out for about a week the 3,000 employees of the Electricity Supply Board for Northern Ireland, who struck work to enforce an increase of 1½d an hour, resumed work last Friday. An undertaking was given to the men that the Joint Industrial Council of the industry would meet within a fortnight to consider the men's claims.

## Replacing Capital Assets

The problem of replacing physical assets was dealt with by Mr. S. M. Rix, deputy secretary of the British Electricity Authority, in a paper, "The Cost of Replacement of Physical Assets," read to the Country Conference of the Chartered Institute of Secretaries at Brighton on 23rd September. The president (Mr. C. R. Heathcock), presided at the meeting, and another paper was "Local Government since the War" by Mr. Ernest Long, deputy chief accountant of the B.E.A.

## Coal Mines Regulations

A revised edition of the reference book entitled "Coal Mines Act, 1911, Regulations and Orders relating to Safety and Health" has been published (H.M. Stationery Office, 2s 3d by post) for the Ministry of Fuel & Power. It differs from pre-1945 editions in being divided into three portions. The first part contains all Regulations which amend sections of the Act of 1911, while all other Regulations and Orders (with subsequent amendments) are arranged alphabetically according to subject in the second part, which sequence is followed with the lists of approved apparatus contained in the third part. An index to regulations is arranged in order of date, together with a list of current forms used under the Act and an appendix on the storage of explosives at mines.

## Demonstration Craft

A few days ago we had the pleasure of inspecting and cruising on the Thames in the *Marandis*, a tastefully furnished and decorated 112ft demonstration craft, owned by the Associated Equipment Co., Ltd., the oil engine manufacturers.

The vessel is propelled by a pair of the company's 9.6-litre marine oil engines which have continuous ratings of 100 b.h.p. at 1,500 r.p.m. Each engine has its own 24 V electrical starting equipment which includes 148 Ah batteries. Illuminated instrument panels and engine room controls are duplicated in the wheelhouse and on the open bridge so that engine control may be effected from each position. Equipment for lighting, ventilation, heating and cooking throughout the craft is supplied by a 220 V 300 Ah "Nife" battery mounted on the deck aft of the saloon. This battery is charged by an auxiliary set, comprising a 100 b.h.p. 1,500 r.p.m. diesel engine direct-coupled to a 66 kW 220 V d.c. generator. The generator is furnished with switching arrangements so that, if desired, it may be used to supply the ship's services direct.

## Trade Announcements

The works address of **Varilectric, Ltd.,** is 10, Melon Road, Peckham, S.E.15 (telephone, Rodney 3960).

**C. J. Callender & Co.,** electrical wholesalers, have moved to 591, Kingston Road, Raynes Park, London, S.W.20 (telephone, Liberty 2647).

Mr. C. E. Jennings has been appointed sales representative for **Ward & Goldstone, Ltd.,** in Yorkshire and Lincolnshire.

As from 24th September the Southampton branch of **W. T. Henley's Telegraph Works Co., Ltd.,** will be: 38/39, St. Mary's Street, Southampton (telephone: 2658).

The Norwich Branch of **British Insulated Callender's Cables, Ltd.,** is now at 18a, St. George Street, Norwich. The telephone number remains unchanged.

The Manchester office of **Macrome, Ltd.,** is removing on 1st October to Transport House, 1, The Crescent, Salford, 5 (telephone: Pendleton 3656).

Mr. L. J. Gellion, who has represented **Linolite, Ltd.,** in the Midland Area for twenty years, has retired, and for the time being all Midland business will be dealt with from the company's Sales Department, 158, Bishopsgate, London, E.C.2.

## Change of Address

The offices of the Professional Engineers' Appointments Bureau have been moved from 13 to 9, Victoria Street, Westminster, S.W.1. The telephone number remains unaltered and is Abbey 1737.

## Catalogues and Lists

**C. Ryan & Co.,** 2-20, Pancras Street, London W.C.1.—Illustrated leaflet describing the "Ryanco" plumber's electric jointing kit.

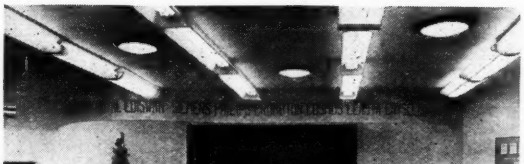
**Hancock & Co. (Engineers), Ltd.,** Progress Way, Croydon, Surrey.—Technical brochure describing an electronically controlled oxygen cutting machine.

**Wm. Sanders (Wednesbury), Ltd.,** Falcon Electrical Works, Wednesbury, Staffs. —Priced folder on unbreakable rubber plug tops.

# Leeds Lighting Centre

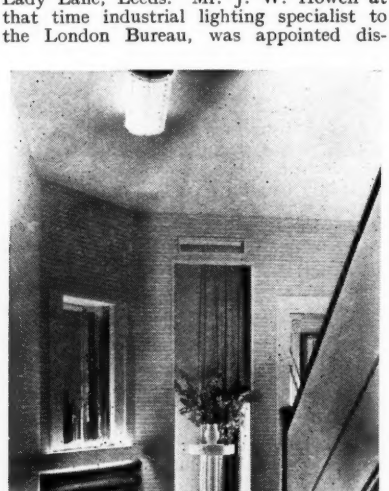
## NEW E.L.M.A. BUREAU

ON 22nd September, the Lord Mayor of Leeds, Alderman Norman D. Vine, J.P., officially opened the new Mid-East England Area E.L.M.A. Lighting Service Bureau, at 24, Aire Street, Leeds, 1, in the presence of the vice-chairman of the E.L.M.A. Council, Mr. C. A. Hughes, the director of E.L.M.A., Mr. W. J. Jones, and a distinguished audience of local city officials and others. After inspecting the premises the Lord Mayor and about fifty guests attended a luncheon to celebrate the occasion at the Queen's Hotel.



The lecture theatre stage at the Leeds Lighting Service Bureau

The Mid-East England office of the Bureau was opened in 1937 at Circle House, Lady Lane, Leeds. Mr. J. W. Howell at that time industrial lighting specialist to the London Bureau, was appointed district engineer and is still serving in that capacity. His extensive lecture activities and lighting investigations, particularly in connection with the textile industry have made him well known to all those connected with lighting in his area.



First floor entrance: fluorescent lighting is concealed around the facing arch and in the mantleshelf

The opening of the Bureau coincides with the silver jubilee of the London Lighting Service Bureau. The new premises which are situated in the centre of the city, consist, apart from offices, of an entrance vestibule on the first floor of 24, Aire Street, with, on the floor above, a shop-lighting section containing a full-scale shop window, a lighting principles and industrial lighting demonstration room, and a well-equipped and unusually arranged lecture theatre with a seating capacity for 150. There is also a committee room with a specially constructed barrel ceiling for indirect lighting. Throughout the Bureau filament and fluorescent lighting are shown side by side and particular care has been given to the colour of the decorations. The general layout and replanning of the premises, which were originally used as a warehouse, were primarily the work of the local L.S.B. Committee working in close collaboration with the London office, with Mr. H. S. Davison as co-ordinating architect.

The new premises make the running of illumination design courses in Leeds very much easier and it is hoped to stage many lectures, exhibitions and demonstrations with specialized appeal to such bodies as the National Coal Board, the Cotton Board, the Wool (and Allied) Textile Employers' Association, and city lighting and education authorities.

# Ships' Auxiliary Power

## Four 850 kW sets for t.s.s. "Himalaya"

THE latest addition to the P. & O. Company's fleet for the Australian service is the 28,000-ton 25-knot passenger liner t.s.s. *Himalaya*. The vessel completed satisfactory sea trials on 1st September and is due to sail on her maiden voyage to Australia on 6th October.

All auxiliary power is supplied by four B.T.H. geared d.c. turbo-generators with combined condensers, each rated at 850 kW, 6,000/750 r.p.m., 220 V. Each generator has a closed air circuit, embracing all but the commutator and brushgear, with the cooler mounted at baseplate level. A large proportion of the heat is carried away by sea-water and not passed into the engine room which is an important consideration for ships sailing in tropical waters. Cooling by this method enables a saving to be made in the engine-room ventilating trunking; another advantage is that the total enclosure of the windings of the machine prevents carbon dust and foreign matter entering the windings. Since the closed air-circuit does not include the commutator or brushgear, these are readily accessible for maintenance and adjustment.

The air circuit of the machine is arranged without any overhead trunking. A fan at the turbine end of the armature draws air up through the cooler, mounted between the generator and the gearbox. After circulating through the machine towards the commutator, the air passes downwards into the baseplate, through the space between the magnet frame and the baseplate, and back to the cooler through which sea water is circulated. A dial thermometer on each machine is fitted with alarm contacts for operating a warning Klaxon and red lamp should air outlet temperature exceed the safe maximum.

Steam is supplied to the five-stage impulse-type turbines at 500 lb/sq in and 850 deg F, exhausting at 28½ in vacuum with a sea-water temperature of 73 deg F.

In addition to the main speed governor, an emergency tripping mechanism will close the stop valve should the machine overspeed and also operate a relay switch to trip the generator circuit breaker and so prevent the set motoring. Provision is also made to close the stop valve and open the circuit breaker automatically should the oil pressure on the set fail.

Four similar sets are being supplied by B.T.H. for the new P. & O. vessel *Chusan* and three more for the *Empire Fowey*.

# E.P.E.A. Dinner

## Minister of Fuel's Tribute to Association

THE twenty-second annual dinner given by the South Eastern Division of the Electrical Power Engineers' Association to the National Executive Council, which was held on 24th September, was distinguished by being the first to have as guest a Minister of the Crown, as was pointed out by the chairman, Mr. T. W. Lukehurst, who presided over a gathering of nearly 400.

Mr. Hugh Gaitskell (Minister of Fuel and Power), proposing the toast of the Association, pointed to the enlargement of the duties of trade unions (particularly in nationalized industries) beyond the negotiation of wages and conditions. Thus the E.P.E.A., which had strongly favoured national ownership, produced the plan that formed the basis of the new structure of the supply industry. It had also done good work in the training and education of its members for securing efficiency—not only in technical matters but also in relations between management and employees. The greatest difficulty facing the industry—shortage of plant capacity—could be mitigated by running old plant and minimizing plant "outage," but he doubted whether conditions would be better this winter than last, even if the weather were as mild.

Responding, Mr. F. Seddon (president, E.P.E.A.) said that the Association aspired to train its members up to "Board-level" positions. Its Technical Groups, in which manufacturers' engineers shared, had their own field and were not rivals of the Institution of Electrical Engineers. The post-war task of E.P.E.A. members had been extremely arduous, but as a team they had every confidence in the ability, foresight and leadership of Lord Citrine (present as a guest) who could count on their loyalty. The Association aimed to increase its membership and in this respect had some difference of opinion with the B.E.A. which was under discussion elsewhere.

Sir Vincent de Ferranti, making his first public appearance as chairman of the British Electrical Power Convention, proposed "The Electricity Supply Industry." He congratulated the Association on its success in demonstrating that electricity could be supplied to every household, thus confirm-

ing the views enunciated by his father 56 years ago to incredulous colleagues.

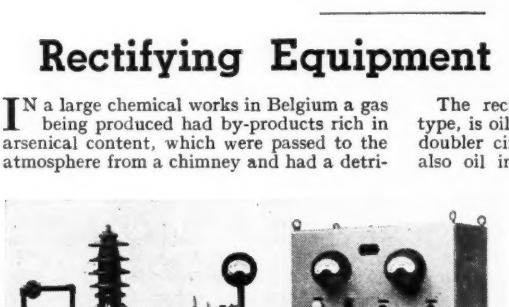
Response was made by Mr. H. J. Randall (chairman, London Electricity Board), who prophesied that the decade after the passing of the 1947 Act would be regarded as the most important in the history of the electricity supply industry. Whatever Government had been returned in 1945, a sweeping overhaul would have been necessary. There was no united voice in the industry and it was left to Parliament to furnish a solution. Gratifying features were that those not in political sympathy with nationalization had loyally accepted the new order and that the change had been carried through with smoothness and efficiency.

The chairman thanked Messrs. F. H. Smethurst, Hall, Wells and Hildebrand for their work in organizing a most successful function (which terminated with dancing) and Mr. Smethurst made his usual modest disclaimer.

# Rectifying Equipment for Belgium

IN a large chemical works in Belgium a gas being produced had by-products rich in arsenical content, which were passed to the atmosphere from a chimney and had a detrimental effect on the surrounding land, which is under agriculture. To overcome this nuisance it was necessary to clean the gas and three precipitator chambers were installed, each chamber having a different gas feed but a common output. When precipitating, the gas was cleaned in under one minute and the chimney stack showed no issue of fumes of any description.

A "Davenset" rectifier has been installed of sufficient capacity to supply six precipitator tanks in parallel. The rectifier is suitable for a 250 V, single-phase supply and has an output of 50,000 V at 200 mA. Initially with only three tanks in parallel it was found that 30,000 V at 100 mA was sufficient to give excellent results; the remaining capacity will be absorbed with the later installation of three more precipitator tanks.



**"Davenset" h.v. rectifying equipment in a Belgian chemical works**

The rectifier, which is of the selenium type, is oil immersed, employing the voltage doubler circuit; its associated condenser is also oil immersed. The necessary transformer, together with certain protective features, is mounted in the main tank. To control the installation a panel has been provided, and since it is common to have temporary short circuits due to the nature of the gas and the fact that there is no knocker system incorporated in the precipitator tank, special precautions have been taken.

The order was obtained by Partridge, Wilson & Co., Ltd., in face of intense international competition, the company being able to meet the very important demands of the customer regarding delivery. Mr. H. G. Wilson, the managing director, who has been attending the installation of the equipment in Brussels, says that the Belgian company proposes to install a further eighteen equipments in its various plants.

## Electricity on Scottish Farms

FIGURES issued by the Department of Agriculture for Scotland give the following data on 77,056 schedules issued. Some 60,000 replies were received, showing that 13,209 farm premises used electricity as against 44,947 who did not in 1948. Comparative figures for 1943, when 51,000 replies were received, showed 8,913 users against 41,064.

# Overseas Electrical Trade

## IMPROVEMENTS IN EXPORTS IN AUGUST

EXPORTS of electrical goods and machinery during August provided one of the few bright spots in the monthly returns of the Board of Trade, practically all other classes of goods showing a decline in exports while imports increased. The total electrical exports were almost £2 million above those for August last year, the actual figures being £9,947,564 and £7,990,701 respectively. Though £767,350 above the July total, the August figure was still well below the June figure of £11,034,248, which was the second best on record. The result may be considered satisfactory when it is remembered that August is the most popular holiday month.

The effect of the South African Government's import restrictions is reflected in the fact that that country ceased to be the United Kingdom's largest customer. Australia headed the list of buyers of electrical goods and apparatus, taking £1,178,114 worth (£702,806 in August, 1948), with South Africa second, her purchases, at £760,482, being £24,336 lower than in the corresponding month of last year. India, a close third, increased her share of the trade from £431,252 to £706,155.

Among countries outside the Empire the best markets were the Irish Republic (£193,543), Norway (£173,171), Sweden (£150,989), the Netherlands (£120,378), Egypt (£148,126) and Venezuela (£146,419). While Canada increased her purchases from £75,471 to £94,420, the United States bought only £16,437 worth (£19,140 in August, 1948).

Australia and South Africa between them accounted for about two-thirds of the £787,969 worth of telegraph and

**TABLE I.—ELECTRICAL EXPORTS**

| Class | August, 1949 | August, 1948 |
|---|---|---|
| | £ | £ |
| Telegraph and telephone wires and cables (submarine) ... | 39,336 | 411 |
| Ditto, not submarine ... ... | 787,969 | 706,411 |
| Wires and cables, rubber insulated ... ... ... ... | 357,993 | 364,680 |
| Ditto, cotton, silk or artificial silk insulated ... ... ... | 62,763 | 59,465 |
| Ditto, enamel, glass or asbestos insulated ... ... ... | 77,053 | 29,409 |
| Ditto, paper insulated ... ... | 801,205 | 605,120 |
| Ditto, other ... ... ... | 86,292 | 112,528 |
| Commercial radio apparatus ... | 359,432 | 167,718 |
| Domestic radio apparatus ... | 181,870 | 247,054 |
| Telegraph, telephone and signalling apparatus ... ... | 1,338,972 | 1,145,680 |
| Radio loudspeakers ... ... | 44,264 | 22,439 |
| Sound reproducing apparatus components and parts, other than cinematograph apparatus | 198,856 | 218,367 |
| Other radio, etc., apparatus ... | 57,222 | 45,992 |
| Radio valves ... ... ... | 162,142 | 129,423 |
| Electric lighting carbons ... | 8,756 | 10,057 |
| Lamps, not exceeding 24 V ... | 30,279 | 21,120 |
| Discharge lamps ... ... | 35,316 | 22,757 |
| Other lamps ... ... ... | 56,162 | 72,123 |
| Other lighting apparatus ... | 334,759 | 388,899 |
| Primary batteries ... ... | 75,326 | 48,699 |
| Accumulators for motor vehicles | 119,245 | 109,115 |
| Ditto, traction ... ... ... | 10,224 | 16,868 |
| Ditto, radio ... ... ... | 3,818 | 3,770 |
| Other portable accumulators ... | 81,809 | 16,184 |
| All other accumulators ... ... | 36,525 | 33,652 |
| Parts and accessories ... ... | 84,629 | 61 633 |
| Cooking appliances ... ... | 81,139 | 132,801 |
| Heating appliances ... ... | 45,884 | 52,464 |
| Parts and accessories of cooking and heating appliances ... | 33,215 | 28,786 |
| Flat irons ... ... ... | 24,572 | 21,521 |
| Commercial electrical instruments ... ... ... ... | 98,624 | 79,424 |
| House service meters ... ... | 116,088 | 207,158 |
| Time recorders and time switches | 6,205 | 14,796 |
| Other electrical instruments ... | 85,488 | 80,156 |
| Electro-medical apparatus (not X-ray) ... ... ... | 39,633 | 24,427 |
| X-ray apparatus, tubes and parts ... ... ... ... | 94 597 | 39 683 |
| Permanent magnets ... ... | 10,093 | 17,080 |
| Insulating cloth and tape ... | 62,148 | 44,605 |
| Other insulating materials ... | 52,379 | 85,506 |
| Unclassified goods and apparatus | 365,891 | 382,641 |
| Generators, up to 200 kW ... | 483,367 | 223,100 |
| Ditto, over 200 kW ... ... | 367,761 | 98,102 |
| Ditto, parts ... ... ... | 98,421 | 98,184 |
| Motors, railway and tramway ... | 11,141 | 8,821 |
| Ditto, other, up to ¼ h.p. ... | 50,216 | 94,122 |
| Ditto, from ¼ to 1 h.p. ... ... | 44,742 | 47,096 |
| Ditto, from 1 to 250 h.p. ... | 418,024 | 338,855 |
| Ditto, over 250 h.p. ... ... | 42,440 | 22,274 |
| Ditto parts ... ... ... | 77,333 | 57,847 |
| Converting machinery ... ... | 14,427 | 3,681 |
| Transformers, including coils ... | 505,048 | 340,298 |
| Rectifiers for power house use... | 32,582 | 20,247 |
| Motor starting and control gear | 204,712 | 124,366 |
| Switchgear and switchboards (not telegraph or telephone)... | 751,339 | 475,621 |
| Other electrical machinery ... | 37,544 | 20,351 |
| Vacuum cleaners and parts ... | 123,533 | 100,026 |
| Other electrically operated portable appliances ... ... | 136,963 | 47,088 |
| TOTAL ... ... ... | 9,947,564 | 7,990,701 |

telephone wires and cables (not submarine) shipped abroad, while about one-third of the £357,993 worth of rubber-insulated wires and cables went to India, Malaya and Hong Kong. Australia (£240,932) and India (£209,658) were the biggest buyers of other types of cables, exports of which totalled £1,027,313.

£51,866). To a decline from £30,076 to £6,687 in shipments to South Africa can also be traced much of the reduction in exports of electrical instruments, though this was counteracted largely by better buying by Sweden, Norway and the Netherlands.

Shipments to Russia of £193,895 worth

**TABLE II.— DISTRIBUTION OF ELECTRICAL GOODS AND APPARATUS**

| Destination | Aug., 1949 | Aug., 1948 | Destination | Aug., 1949 | Aug., 1948 |
|---|---|---|---|---|---|
| | £ | £ | | £ | £ |
| Channel Islands | 31,886 | 56,053 | France | 70,744 | 73,483 |
| Malta and Gozo | 11,166 | 24,748 | Switzerland | 65,252 | 33,099 |
| Cyprus | 9,215 | 16,224 | Portugal | 32,807 | 148,391 |
| British West Africa | 57,401 | 66,622 | Spain | 4,792 | 41,585 |
| Union of South Africa | 760,482 | 784,818 | Austria | 20,998 | 23,197 |
| Northern Rhodesia | 29,976 | 33,076 | Hungary | 34,483 | 17,859 |
| Southern Rhodesia | 139,151 | 66,334 | Czechoslovakia | 34,142 | 46,505 |
| British East Africa | 110,757 | 65,246 | Yugoslavia | 28,181 | 1,670 |
| Bahrein, Koweit, Qatar and Trucial Oman | 63,707 | 25,347 | Greece | 59,112 | 35,040 |
| India | 706,155 | 431,252 | Turkey | 52,555 | 54,993 |
| Pakistan | 96,342 | 56,875 | Dutch East Indies | 29,369 | 25,415 |
| Malaya | 231,136 | 178,404 | Dutch West India Islands | 13,411 | 30,626 |
| Ceylon | 60,345 | 69,188 | Portuguese East India | 13,542 | 6,784 |
| Hong Kong | 258,473 | 102,245 | Syria | 29,797 | 59,542 |
| Australia | 1,178,114 | 702,806 | Lebanon | 20,861 | 28,174 |
| New Zealand | 310,737 | 295,027 | Palestine | 6,036 | 23,875 |
| Canada | 94,420 | 75,471 | Egypt | 148,126 | 187,985 |
| British West Indies | 61,098 | 83,784 | Iraq | 14,891 | 117,373 |
| Anglo-Egyptian Sudan | 52,027 | 24,711 | Iran | 47,540 | 115,089 |
| Other British Countries | 84,464 | 77,363 | Burma | 8,969 | 30,313 |
| Irish Republic | 193,543 | 222,473 | China | 286 | 43,040 |
| Soviet Union | 70,399 | 1,953 | United States of America | 16,437 | 19,140 |
| Finland | 29,007 | 35,282 | Mexico | 12,212 | 10,091 |
| Sweden | 150,989 | 206,293 | Colombia | 3,416 | 7,426 |
| Norway | 173,171 | 121,441 | Venezuela | 146,419 | 77,786 |
| Iceland | 21,674 | 21,672 | Chile | 27,919 | 8,707 |
| Denmark | 46,281 | 81,825 | Brazil | 68,971 | 46,145 |
| Poland | 73,412 | 39,407 | Uruguay | 15,584 | 6,258 |
| Germany | 9,369 | 87,23 | Argentine Republic | 108,563 | 186,451 |
| Netherlands | 120,378 | 119,524 | Other Foreign Countries | 116,313 | 128,186 |
| Belgium | 60,970 | 142,207 | TOTAL | 6,547,973 | 5,870,622 |

Domestic radio apparatus exports continue to decline, amounting to only £181,870 in August, compared with £247,054 in the corresponding month of last year: India (£28,407) and Egypt (£21,520) were the best customers. Commercial radio apparatus sales were better at £359,432 (£167,718), as were also those of telegraph, telephone and signalling apparatus. Of the £1,338,972 worth of the latter disposed of Australia took £391,832 and South Africa £306,651.

South Africa (£73,105) is still the largest buyer of accumulators, but the drastic reduction in orders (£2,536 compared with £50,613) from the same country is mainly responsible for the decline from £214,051 to £160,238 in exports of cooking and heating apparatus, though Australia, too, bought substantially less (£35,387 compared with

of generating machinery helped to bring the total exports of this class of equipment to well over double those for August last year, £949,549 compared with £419,386. Australia, the next most important buyer of generators (£144,414), made the largest demand for motors, accounting for £114,427 out of a total of £643,894. India (£312,935), South Africa (£246,465) and Australia (£106,699) headed the list of buyers of other types of electrical machinery.

Imports of electrical goods and machinery during August amounted in value to £364,493, which compares with £236,362 in August, 1948. The United States was responsible for £81,987, Canada for £68,445 and the Netherlands for £40,222 of the total of £286,246 worth of electrical goods and apparatus imported during the month.

# Uganda Electricity Scheme

## CONSTRUCTION CONTRACT PLACED

IT was announced by the Uganda Electricity Board last week that the contract for the construction of the dam and power station at Owen Falls on Lake Victoria had been placed with a group headed by Christiani and Nielsen, Ltd., a London company with Dutch connections. The value of the contract is £3,639,540. In the group are Dutch concerns who were responsible for the restoration of the Netherlands war-damaged harbours, as well as Dorman, Long and Co., Ltd., Edmund Nuttall, Sons and Co., Ltd., and K. L. Kier and Co. (London), Ltd. A company is to be formed in Uganda and payment will be in sterling. It was stated at a Press conference, at which Mr. C. R. Westlake, chairman of the Board, presided, that there was no intention of buying materials from any non-British sources.

Among those present at the conference were: Sir John Kennedy (Kennedy and Donkin), London member of the Board; the Board's civil engineer, Brigadier C. G. Hawes; and Hamed Suleiman Bey, Under-Secretary of the Egyptian Ministry of Public Works, who approved the placing of the contract on behalf of his Government.

The construction of the dam, which is expected to take four years, was the subject of a recent agreement between the British and Egyptian Governments referred to in a statement in the House of Commons by the Foreign Secretary (see *Electrical Review*, 5th May, 1949). Particulars of the scheme have been given in this journal in articles on Mr. Westlake's original report (4th July, 1947, page 17), a later report by the consultants, Sir Alexander Gibb and Partners and Kennedy and Donkin (2nd July, 1948, page 27) and in "Control of the Nile" by Sir John Kennedy (25th February, 1949, page 323).

The plans provide for an ultimate installation of ten 15,000 kW sets, of which four will form the first section. Contracts have already been placed for the first four sets (British Thomson - Houston Co. — with Boving turbines), transformers (Bruce Peebles and Co.), switchgear (General Electric Co., Ltd.) and sluice gates (Glenfield and Kennedy). It is estimated, at present values, that the overall cost per kW of the completed scheme will be about £67.

The power derived from the Owen Falls station will form the basis of a great industrial development in Uganda, for the territory is rich in mineral and vegetable resources, including copper, iron, wolfram, tungsten, potash, lime, cotton, oil seeds, and grass suitable for paper-making. At present the only indigenous fuel is wood; coal and oil have to be brought from overseas to Mombasa and then carried by rail over a distance of 800 miles.

When the Owen Falls power is fully absorbed, vast potentialities remain at further points on the Nile between Lake Victoria and the Sudan. In his article (mentioned above), Sir John Kennedy suggested a figure of 2½ million kW.

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# Sloan Electrical Jubilee

TO celebrate the fiftieth anniversary of the foundation of the Sloan Electrical Co., Ltd., a dinner, attended by over 200 members of the staff and friends, was held on Wednesday last week at the Connaught Rooms, London. Founded by the late Mr. L. G. Sloan, the company was incorporated on 15th April, 1899, and from small beginnings has grown a wholesale distributing organization which now covers the whole country.

In the early days the company's main business was the sale of "Conradty" arc lighting carbons, carbon brushes and electrodes, the company holding the exclusive selling agency for the United Kingdom. Later the sole selling rights were acquired for insulated wires and cables manufactured by Riffelmacher & Engelhardt, of Nürnberg. From the original premises in the City of London several moves were necessary to keep pace with the rapid increase in business until finally 41, Kingsway, became the headquarters. Branches in Manchester, Edinburgh, Bristol and Exeter, with depots at Ealing, Leyton, Peckham, Vauxhall and Watford now provide facilities for serving the whole country.

At the dinner the health of the company was proposed by Mr. N. C. Stedeford, of the National Provincial Bank, who paid tribute to the drive and initiative of the founder of the company and said that this successful example of private enterprise had been built up by the men behind the company. In reply, Mr. F. C. Guildford, chairman of the company, who presided, spoke of the harmony that existed within the

organization and mentioned that eight of the members of the staff present had given the company between them no fewer than 331 years of service. Without the co-operation of a loyal staff, he said, the company could not have succeeded.

The health of the guests, proposed by Mr. W. J. Bensley, deputy managing director, was replied to by Mr. J. C. Verdie, London manager of the Craigpark Electric Cable Co., Ltd., who declared that the company's success was due to its high standard of personal service. Thanks to the chairman were tendered by Mr. N. Robertson, a director of the company. The evening concluded with dancing and a cabaret.

## Television Extension Screens

THERE is no novelty in television extension viewing screens. They are employed for monitorial purposes, but have hitherto been specially devised to suit the particular receiver with which they are associated.

In contrast, the equipment demonstrated last week by A. C. Cossor, Ltd., can be used with any make of British domestic television receiver and, by the addition of a change-over switch, can be operated from American sets, which is a useful export consideration. Two "slaves," sometimes three, can be operated by one parent set (without the latter being altered in any way) at distances up to 80 ft and, moreover, the cathode-ray slave tube can be larger or smaller than the parent.

A supplementary receiver consists of (1) a permanent magnet loudspeaker with manual volume control; (2) power supply circuits for the time base valves, video stages, cathode coupling unit and cathode-ray tube; (3) line and frame scanning generators; (4) synchronization separation circuits; (5) video and phase reversal valves; (6) cathode coupling unit that is attached to the back of any domestic receiver.

The first four items inclusive follow normal television technique. The sixth item uses one valve and, as it must be close to the parent so that it does not alter the picture quality of the parent set, its power must be provided over the connecting cable to the extension screen. It must accept signal amplitudes varying from zero to 40 V to suit various makes of receivers, together with the synchronizing pulses, which necessitates a compensating device that will not introduce any frequency distortion or phase shift over a band some 3-4 Mc/s wide.

The only connections to the parent receiver are those for the loudspeaker extension and one from the modulating electrode of the parent cathode-ray tube to the cathode coupling unit. Isolation from the parent is achieved by condensers.

The output from the cathode coupling unit is fed by a co-axial cable together with the power supply leads in a combined harness to the extension receiver. A plug terminates the cable in a socket on the back of the receiver and then feeds the signal through a circuit that ensures the phase is correct for the particular method of modulation employed. A simple change-over switch is provided for this function. The video amplifier provides a wider band than the conventional video stage to avoid depreciation of the signal to the extension unit. Separate video contrast control is provided on the auxiliary, so that with some receivers it will be possible to reduce the brightness of the parent until no picture is visible, but the picture will be visible on the extension screen. This feature is determined by the design of the parent receiver.

Exactly the same extension receiver is suitable for either the London or Birmingham transmission. When more screens are desired a video and power amplifier unit become essential, not only in the home but also in hotels, flats, hospitals and entertainment centres where television reception is needed in several places at the same time.

## Underground Station Lighting

WORK is to start soon on the replacement of the existing lighting systems at Charing Cross and Waterloo Stations by modern fluorescent "daylight" lamps. As the new escalators and subways at Charing Cross and the new ticket hall, escalators and subway at Waterloo, under construction in preparation for the Festival of Britain, will have fluorescent lighting, it has been decided to equip the existing sections of these stations similarly, both to maintain uniformity of appearance and to improve the standard of lighting.

At Charing Cross, the ticket hall, subways, escalators and tube platforms, as well as the District Line platforms, will be fitted with the new lighting and, at Waterloo, the platforms, subways, escalators and ticket hall, except for the York Road entrance. London Transport's own lighting engineers will do the work, which it is hoped will be completed in time for the Festival of Britain.

Fluorescent lighting was first used by London Transport at Piccadilly Circus station just after the war and has now been adopted as a standard installation at all new or rebuilt stations.

# FINANCIAL SECTION

*Company News*
*Stock Exchange Activities*

## Reports and Dividends

**Oldham & Son, Ltd.**—The consolidated profit and loss account for the year to 31st May last shows a trading profit, with income from investments, of £283,683 (against £260,158 for the previous year). Directors' salaries and fees, depreciation, interest, etc., absorb £38,712 (£35,888), formation expenses of subsidiary £325 (nil), tax £123,564 (£134,060) and preference dividend £6,875 (£3,400). The ordinary dividend, as already announced, is maintained at 60 per cent, general reserve receives £70,000 (£40,000) and £91,320 (£80,113) is carried forward.

In a statement issued with the report and accounts, Mr. J. Oldham, chairman, says that the period covered has been one of great activity and continued progress. The total output has considerably increased, and exports have risen by 50 per cent over the previous year. An extensive programme of plant re-equipment and administrative reorganization has been carried out. With regard to the formation last January of Oldham & Son Africa, Ltd., in which they have a 50 per cent interest, the plant and equipment for the works is expected to be installed early next year. Important developments in France have made that country one of the largest overseas users of the company's mine lighting equipment. Complete manufacture of Oldham mine lighting accumulators is to be commenced by a new concern, the Société Francaise des Procédés Oldham, of which they hold 75 per cent of the share capital. The establishment of a manufacturing unit in India is being discussed.

An extraordinary general meeting is to be held to consider resolutions for capitalizing £100,000 of the reserves, to be applied in making a bonus issue of 2,000,000 ordinary shares of 1s in the proportion of one share for each ordinary share held. This will result in an increase of the ordinary share capital from £100,000 to £200,000.

**Richardsons, Westgarth & Co., Ltd.,** report that their consolidated profit and loss account for the year ended 31st March shows a trading profit of £526,290 (£484,330), plus interest £1,963 (£2,783), making £528,253 (£487,113). Depreciation takes £75,704 (£72,967), auditors' fees £1,065 (£1,055), taxation £281,050 (£250,000) and group profits retained by subsidiaries £1,131 (£1,100), leaving a net profit of £169,303 (£161,981). A sum of £80,000 (£110,000) is placed to general reserve and the dividend is increased from 8 to 10 per cent, leaving £91,829 (£60,915) to be carried forward. In 1947-48 a 2 per cent capital distribution was made from reserve. Current assets total £2,079,254 (£2,023,192), including work in progress £977,025 (£578,161).

At the annual general meeting on 20th September, Lt. Col. H. M. Stobart, the chairman, stated that the new alternator shop at Hartlepool was now in production and also a new small machine shop and another fitting shop. All these extensions had substantially increased the company's capacity for the production of alternators, etc. The first two large turbo-alternators for the British Electricity Authority's post-war programmes were being erected on site and a further similar unit was ready for delivery. Large condensers for a number of power plants had also been completed and, in general, they were in advance of their customers' requirements. Orders received during the year included four large turbo-alternator sets, one of which would be coupled to their first hydrogen-cooled alternator. Due to their close liaison with Brown Boveri of Baden they were in a position to manufacture hydrogen-cooled machines which represented the latest development in turbo-alternator design. Orders had also been received for a number of large condensing plants and for industrial turbo-alternators and turbo-blowers.

**The Palestine Electric Corporation, Ltd.**—The annual meeting was held on 23rd September, Viscount Samuel (chairman) presiding. In his statement, which had been circulated with the report and accounts, the chairman said that considering the adverse circumstances of the year the financial results might be regarded as satisfactory. The sales of electricity totalled 246.2 million kWh, only 12 per cent less than in the previous year. The evacuation of a great part of the Arab population necessarily involved a loss of consumers, nevertheless, the total number of consumers increased by 4,241, making a total at the end of the year of 128,561. The 12,000 kW set ordered in 1945 for Reading power station was put into commission last year. The installation

of the 30,000 kW set for the Haifa power station, also ordered in 1945, was delayed, partly due to delay by the manufacturers and partly due to the dislocation resulting from the situation in Palestine. It was expected that the set would be ready for operation before the end of the current year. Orders for a further 30,000 kW set had been placed and it was hoped that the set would be in operation in the course of the year after next.

**The Nigerian Electric Supply Cpn., Ltd.,** held its annual general meeting on 20th September, Major E. Seaborn Marks, chairman and managing director, presiding. In the chairman's statement which was circulated with the accounts it was mentioned that the work on the harnessing of a third fall on the Kurra River had been started and would probably take two to three years to complete. It would provide a much needed standby of 4,000 kW. The cost of construction and equipment was estimated at £175,000.

**Ferranti, Ltd.,** in a preliminary statement, report a trading profit for the year ended 30th June last of £481,222, as compared with £397,201 for the preceding year, and a net profit, after taxation and other charges, of £178,818 (against £143,388). A loss of £45,791 was sustained by subsidiaries (against a profit of £38,320). It is proposed to maintain the ordinary dividend for the year at 6 per cent, tax free.

**Associated British Engineering, Ltd.,** is paying an interim ordinary dividend of 6 per cent, less tax. No interim was paid for the previous year, but the ordinary dividend for the year was 12 per cent., less tax. The directors state that the interim payment merely represents a change of method and does not imply any increase in the total ordinary dividend for the year.

**The Brush Electrical Engineering Co., Ltd.,** has declared an interim dividend of 4 per cent. No interim was paid in the preceding year, but the payment for the year was 10 per cent.

**Allen West & Co., Ltd.,** are applying to the Capital Issues Committee for permission to make a three-for-five bonus issue. The present issued capital is £609,375 in stock units of 5s each.

**The Calcutta Tramways Co., Ltd.,** reports a revenue for 1948 of £268,736, against a debit balance of £124,597 for 1947. It is proposed to pay a final ordinary dividend of 3½ per cent, tax free, making 6 per cent, tax free, for the year. No ordinary dividend was paid for 1947.

**The Bagdad Light & Power Co.** reports a net profit for 1948 of £90,676, as compared with £80,705 for 1947. The ordinary dividend for the year is 7 per cent, tax free (against 6½ per cent, tax free, for 1947).

**Thos. Bolton & Sons, Ltd.,** are maintaining their interim dividend at 2½ per cent.

**Ericsson Telephones, Ltd.,** are again paying an interim dividend of 5 per cent, tax free.

**Stothert & Pitt, Ltd.,** are paying an ordinary dividend of 15 per cent, as compared with 10 per cent, plus a bonus of 5 per cent.

**Aberdare Cables, Ltd.,** is increasing its interim dividend from 6 to 12½ per cent.

## Meeting of Creditors

**Electro Technical Industries, Ltd.**—An informal meeting of creditors was held on Monday last for the purpose of acquainting them with the present position of the company and of considering what measures could be adopted for the furtherance of their interests.

## Bankruptcies

**L. O'Connor,** trading as Paragon Electrical, 27, Wellington Square, London, S.W.3, electrical and radio contractor.—First meeting 5th October and public examination 22nd November, both at Bankruptcy Buildings, Carey Street, London, W.C.2.

**L. M. Watts,** Cucumber Lane, Brundall, Norfolk, radio and electrical engineer.—Last day for receiving proofs for dividend, 8th October. Trustee, Mr. F. R. D. Walter, Castle Chambers, Opie Street, Norwich, Official Receiver.

**E. J. Tomes,** electrical engineer, 26, Oakridge Road, High Wycombe, Bucks.—Receiving order made 14th September on debtor's own petition. First meeting 3rd October at 3, Central Buildings, Matthew Parker Street, London, S.W.1. Public examination 20th October at the County Hall, Aylesbury.

**J. H. Trevithick,** electrician, a partner in firm of Power, Light & Sound, 51, Fore Street, Callington, Cornwall.—Public examination 4th November at 4, Eliott Street, The Hoe, Plymouth.

**J. V. Depledge,** electrical contractor, lately carrying on business at 108, Frodingham Road, Scunthorpe.—Trustee, Mr. L. F. McCulloch, 26, South St. Mary's Gate, Great Grimsby, appointed 16th September.

## Liquidation

**Raymax Electrical Co., Ltd.**—Winding up voluntarily. Liquidator, Mr. J. G. Birkett, King William Street House, Arthur Street, London, E.C.4.

# FINANCIAL SECTION
# STOCKS and SHARES

THIS week's reassembling of Parliament was not expected by Stock Exchange members to lead to anything sufficiently stirring to cause notable fluctuations in the prices of securities. Markets have settled down soberly; indeed, in a subdued manner as compared with the lively excitement which occurred on the business day following the announcement of devaluation. Then, as our brief table last week showed, a general rise in ordinary shares in the industrial markets was a leading feature. Part of the improvement shaded off: there was little or no follow-through on the part of investment.

**British Electricity Stocks**

Compared with their prices immediately before devaluation day, British Electricity 3 per cents 1968-73 stand at 94 against 94¾, and the 1974-77 issue at 93 against 93¾. The yields are a shade either side of £3 4s per cent, or of £3 7s 6d per cent allowing for capital gain on redemption. Present prices represent an improvement on the quotations at which the market agreed to resume business on Tuesday of last week. Considering the extent of the devaluation, the market is credited with showing more resistance than had been expected, to circumstances admittedly unfavourable to fixed-interest securities. Satisfaction in this respect is severely modified by the 10 per cent depreciation which preceded the event.

**Metal Prices**

Companies connected with electrical and cable work of any kind are thought likely to pass on the increased metal prices to their customers, but this, it is suggested, may lead to some slight contraction of business, and, with limitation of dividends still in force, it will be hoping rather too much to look for increased distributions in the near future. British Insulated Callenders are 1s lower at 32s and Associated Electrical Industries, after last week's 3s rise, lost 1s 3d of it at 76s 3d. Henley's at 24s 6d are 6d to the good.

**Electrical Equipment Shares**

Increases in the Government's prices for copper and lead turned upwards the reverse side of the devaluation medal; the effect has helped to deflate the initial enthusiasm for home industrials engendered by the decision on sterling. Most of the industrial market's new business was, in any case, concerned with the companies having obvious connections with dollar markets. Electrical equipment shares took only a minor participation in the market swing. General Electrics, for instance, which were 78s 6d three weeks ago, are now 81s 6d, having been 6d higher. The yield of £4 6s 6d per cent is, incidentally, rather more than 20s per cent better than the return on British Electricity stocks.

**Price Fluctuations**

Amongst the rises which have occurred during the past week, one of 5s in Aberdare Cables, to 57s 6d, stands out prominently. The company has declared an interim dividend of 12½ per cent against 6 per cent a year ago. Rises have outnumbered the falls, and amongst the improvements are English Electric, 47s 6d, Crabtree, 34s, Hoover, 31s 3d, and Lucas, 81s 3d. C. A. Parsons rose to 66s 3d, to react to 62s 6d. Allen West have gained 1/6 at 11s 6d, and British Vacuum at 9s are 1s up. International "Tel. and Tel." are 5 up at 19. Cable & Wireless ordinary secured a gain of 4 at 239. British Electric Traction deferred dropped 50 to 1,585. Murex at 47s 6d and Babcock & Wilcox 61s 3d, are lower on the week. At 6s, Brush Electrical show no change on the declaration of an interim dividend of 4 per cent.

**Oldham & Son's Accounts**

This company's 1s ordinary shares have risen during the month from 9s 6d to 11s 3d, on the strength of the excellent profits statement now confirmed by the full report. They show a yield of £5 6s 8d per cent on the 60 per cent dividend, which absorbs only £33,000 net of the £114,000 available after taxation (giving earnings equal to 207 per cent). The appropriation of £70,000 for general reserves brings total reserves to £332,500. With net assets about four times the size of the £100,000 nominal ordinary capital, the board proposes to raise the latter to a more realistic figure by issuing a 100 per cent share bonus.

**Effect of New Issues**

An increasing number of companies are taking steps to bring their nominal capital into closer relation with the capital actually employed in the business, and the medium of bonus share issues is the natural method for this purpose. Directors are, as a rule, careful to explain that, in such cases, no extra distribution of profits is likely to be made for the present. One result of the increased capital process is to give shares a greater marketability. In theory, this has a strengthening effect upon prices in that it brings the shares within the reach of the smaller investor.

# Next Week's Events

**Monday, 3rd October**

BIRMINGHAM.—Imperial Hotel, 6 p.m. I.E.E. South Midland Supply and Utilization Group. "The Phase/Neutral System of Supply for Rural H.V. Distribution," by G. T. Garwood and G. J. Websdale.

LEEDS.—Great Northern Hotel, 7.30 p.m. A.S.E.E. Leeds Branch. "Refrigeration," by E. Hargreaves.

LIVERPOOL. — Royal Institution, Colquitt Street, 6.30 p.m. I.E.E. Mersey and North Wales Centre. Chairman's address by D. C. Fleming.

LONDON.—At the Geological Society, Burlington House, W., 5.30 p.m. Society of Engineers. "Scientists v. Engineers," by G. Constantinesco.

SHEFFIELD.—Royal Victoria Station Hotel, 7.30 p.m. A.S.E.E. Sheffield Branch. "Electrical Measuring Instruments for Works Use," by E. R. Davies.

**Tuesday, 4th October**

COVENTRY. — East Midlands Electricity Board's Showrooms, Corporation Street. E.P.E.A. Midland Technical Group. "The Use of Electricity in Welding," by C. L. Railton.

ELTHAM.—Castle Hotel, High Street, 8 p.m. A.S.E.E. South-east London Branch. Lecture and demonstration. "Suppression of Radio Interference," by H. Andrews.

ENFIELD.—St. Andrew's School, Sydney Road, 7.30 p.m. Institution of Engineering Draughtsmen and Designers. Middx, Herts and Essex branch. "Form in Engineering Design," J. Beresford-Evans.

HAMMERSMITH. — Town Hall, 7.30 p.m. A.S.E.E. West London Branch. "Company Partnership and Profit Sharing Schemes in Industry," by H. O. Hear.

LEEDS.—Yorkshire Electricity Board Offices, 1, Whitehall Road, 6.30 p.m. I.E.E. North Midland Centre. Address as chairman by J. R. Rylands.

LONDON.—At the Royal Society of Arts, W.C.2, 2.30 p.m. Society of Relay Engineers. "Line Equalization with special reference to Programme Circuits," by H. J. Marchant.

At the Royal Society of Arts, W.C.2, 6.45 p.m. Institution of Works Managers, London branch. "Reduce Your Overheads," by L. C. Ord.

LOUGHBOROUGH.—Loughborough College, 6.30 p.m. I.E.E. East Midland Centre. Address as chairman by A. Latham.

MANCHESTER.—Engineers' Club, Albert Square, 6.30 p.m. I.E.E. North-Western Centre. Address as chairman by Dr. C. Dannatt.

ROMFORD.—Mawney's Arms, Mawney's Road, 8 p.m. A.S.E.E. South-East London branch. "Suppression of Radio Interference."

**Wednesday, 5th October**

MIDDLESBROUGH.—Cleveland Scientific and Technical Institute, 6.30 p.m. I.E.E. Tees-Side Sub-Centre. Address as chairman by R. Dingwall.

PALMERS GREEN.—St. John's Hall, Hoppers Road, 8.15 p.m. A.S.E.E. North London branch. "Stud Welding as a Modern Production Tool," by C. C. Henderson.

PORTSMOUTH.—British Electricity House, 111, High Street, 6.30 p.m. I.E.E. Southern Centre. Address as chairman by R. H. Coates.

YORK.—Royal Station Hotel, 7.30 p.m. A.S.E.E. York branch. "Modern Fixing Practice," by R. P. Dunn.

**Thursday, 6th October**

BRISTOL.—Electricity House, Colston Avenue, 7 p.m. I.E.E. Bristol Students' Section. "Speed Control of Induction Motors," by D. C. Flack.

CROYDON.—Café Royal, North End, 8 p.m. A.S.E.E. South London Branch. "A.C. Motor Control, including reference to Electronic Control," by S. H. Harding.

EXETER.—Rougemont Hotel, 3 p.m. I.E.E. South-Western Sub-Centre. Address as chairman by A. L. Keet.

LONDON.—Savoy Place, London, W.C.2, 5.30 p.m. Institution of Electrical Engineers. Inaugural address of the president, Prof. E. B. Moullin.

**Friday, 7th October**

BIRMINGHAM.—Imperial Hotel, Temple Street, 6 p.m. Illuminating Engineering Society, Birmingham Centre. Chairman's address by P. Hartill.

Magnet Club, Witton. Electrical Industries Benevolent Association, Birmingham Branch. Dance and carnival.

CARDIFF.—At the South Wales Electricity Board Demonstration Theatre, 5.45 p.m. Illuminating Engineering Society, Cardiff Centre. "Colour," by Dr. J. W. Ferguson.

LONDON.—Café Royal, W.1, 6 for 6.30 p.m. Electrical Trades' Commercial Travellers' Association. Annual dinner-dance.

At the Lighting Service Bureau, 2, Savoy Hill, W.C.2, 6 p.m. Royal Statistical Society, Industrial Applications Section. "The Control of Quality in Electronic Tube Manufacture," by Dr. E. A. G. Knowles.

39, Victoria Street, S.W.1, 6.30 p.m. Junior Institution of Engineers. "Henry Maudslay and the Maudslay Scholarship," by J. F. Petree.

MANCHESTER.—Engineers' Club, Albert Square, 6.45 p.m. Manchester Association of Engineers. Presidential address by W. Redfern.

PERTHSHIRE.—Gleneagles Hotel. Incorporated Sales Managers' Association. Annual conference (continued until 10th October).

STAFFORD.—King Edward Grammar School, 7 p.m. I.E.E. North Staffordshire Sub-Centre. Address as chairman by J. T. Moore

**Saturday, 8th October**

LONDON.—I.E.E. London Students' Section, 10 a.m. Visit to Beckton Gas Works, E.6.

## Midland Electrical Engineers' Ball

THE annual ball of the Midland Electrical Engineers' Association will be held on 18th November at the Grand Hotel, Birmingham. Tickets (30s each) can be obtained from Mr. H. Hooper, hon. secretary, c/o British Electricity Authority, 53, Wake Green Road, Birmingham, 13.

# Electricity Supply

## Stratford-on-Avon Inquiry Result : Street Lighting Improvements

THE Ministry of Fuel and Power has consented to the erection of electricity lines on poles to supply Oxstalls Farm at Stratford-on-Avon. A decision regarding Alveston Hill Farm is still awaited. The Town Council opposed the proposals on the ground that the lines would lower the amenities of the district, and an inquiry was recently held.

### *Lighting Conversion*

A scheme for the replacement of the existing gas street-lighting at Horncastle by electric lighting has been approved by the Urban District Council. The total estimated cost is £573 per annum.

St. Asaph (North Wales) Council is taking preliminary steps for a change-over in street lighting from gas to electricity as the existing gas contract ends this winter. The Merseyside and North Wales Electricity Board has submitted a plan showing the position of the electric lamps in the area, and this has been provisionally approved by the Council.

The Wellington (Salop) U.D.C. has agreed to the Midlands Electricity Board lighting Holyhead road at an estimated cost of £480, subject to the approval of the Ministry of Transport.

### *Judgment Suspended*

Because it was not in possession of the full facts, Ogwen R.D.C., at its last meeting, decided to suspend judgment on the North Wales hydro-electric proposals. Mr. D. Emrys Williams said that opponents claimed that Welsh scenery would be spoiled to provide power for "export" to England. That was not true, for at the moment North Wales was "importing" a large proportion of the necessary electricity. The fact that societies were protesting meant nothing. Climbers and ramblers did not know what it meant to live in old cottages lit by candles, otherwise they would speak differently.

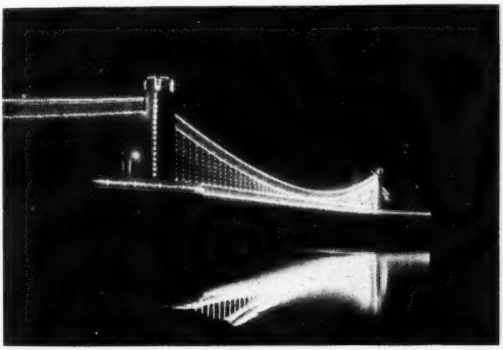
### *Change-over Problems*

At a meeting of the Devon District Committee of the South West Regional Board for Industry a deputation from Barnstaple Chamber of Commerce requested the Committee's help in obtaining information from the South Western Electricity Board regarding the completion of the change-over from d.c. to a.c. in the town. Representatives of the Electricity Board stated that the Board was anxious to press on with conversion, but it was faced with serious problems, including shortages of copper and lead. Further difficulties in obtaining raw materials might arise as a result of devaluation.

The representatives also promised to investigate a report that tenants of new Council houses at Bishopsnympton were without supply, though the houses had been completely wired for six months.

### *British Columbian Water Power*

The second stage in the John Hart development of the British Columbia Power Commission on Vancouver Island is now nearing completion. Two 25,000 h.p. units were installed in connection with the original development a year ago, and work then started on the second stage to increase the total capacity to 100,000 h.p. The storage dam at Ladore Falls, at the lower end of Campbell Lake, now almost completed, will ensure a high level of water at Irene Pool above the main dam. It is not proposed to start work on the third stage for some time, possibly for four or five years, depending on the demand for power by in-

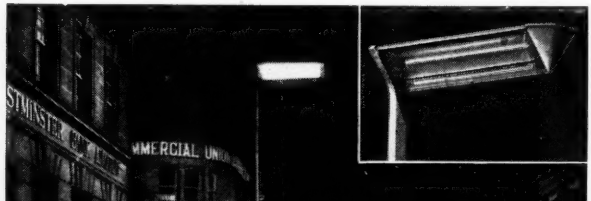


**Conway Suspension Bridge, North Wales, illuminated by more than 2,000 "Mazda" 15 W pearl lamps. B.T.H. lighting engineers collaborated with the Merseyside and North Wales Electricity Board to secure the impressive effect seen above**

dustry. The Campbell River project will have an ultimate capacity of 180,000 h.p., of which 150,000 h.p. will be produced by six generators in the main John Hart power plant and the additional 30,000 h.p. at Ladore Falls dam. The Commission has already completed a double-circuit transmission line delivering power at 132 kV to substations at Nanaimo and Port Alberni.

## *Preston Street Lighting*

Fishergate, Preston, the earliest reference to which appears about the year 1400, is in 1949, notable for its modern installation of fluorescent street lighting. The scheme was planned by Mr. G. Berry, borough engineer and surveyor, and Mr. Marshall, the street lighting superintendent. Particular attention was paid to the fact that a section of the road is one-way, extremely congested and with numerous side roads. Narrow pavements necessitated designing a special column with a small base of 9½in. This was produced by Concrete Utilities, Ltd. In conjunction with Siemens Electric Lamps and Supplies, Ltd., a special head was designed, the lantern being bolted direct to the column at a height of 25ft, forming a composite unit of pole and lantern. This unit was approved by the Royal Fine Arts Commission.



**Fluorescent lighting in Fishergate, Preston, showing the specially designed lantern and pole-head**

The design of the lantern embodies several interesting features. It consists of five main sections, comprising roof and castings, supports for control gear and reflectors, bottom and side reflectors and two "Perspex" doors. An internal bracket is fixed to the column by four bolts. All control gear is housed in the lantern. The "Perspex" doors open at the bottom for relamping and maintenance. Three Siemens "Sieray" 80 W natural instant-start fluorescent lamps are fitted in each lantern, and each unit is controlled by a Venner M.S.S.L. time switch with solar dial. Provision is made for switching off two of the lamps at midnight if desired. The whole of the equipment was supplied by Siemens Electric Lamps and Supplies, Ltd., the erection being carried out by Erecon, Ltd.

## *New Scottish Bridges*

The North of Scotland Hydro-Electric Board will shortly hand over to the County Councils concerned three new bridges which have been built in connection with the Tummel-Garry, Loch Sloy and Loch Fannich projects. In Perthshire, near Pitlochry, the Aldour Bridge has been built across the Tummel to replace the old Clunie Bridge which will be submerged by the loch formed by the Pitlochry Dam. This is a three-span bridge with an overall length of 301ft 6in, built in modern style similar to Waterloo Bridge, London. In Dumbartonshire, a bridge was needed to carry the trunk road from Balloch to Crianlarich over the tailrace channel of the Loch Sloy power station.

In Ross-shire, the Grudie Bridge power station of the Loch Fannich project has also involved a new bridge to carry the main road from Garve over the tailrace.

## *Tariff Concession*

Domestic consumers on quarterly accounts in Ayrshire, Hamilton, Kirkcudbright and Skelmorlie will benefit from a recent decision of the S.W. Scotland Electricity Board. They are the only consumers in the Board's area on domestic tariffs (except for those with prepayment meters) who are paying a running charge in excess of ¾d a kWh. Present rates vary from 0.7875d to 1d. The Board is to reduce the charges to ¾d.

## *Aswan Dam Scheme*

The original estimate for the Aswan Dam hydro-electric project was £E.10,500,000, but it is now estimated that it may cost over £E.25 million. The date for the adjudication on the civil engineering side has been extended until 11th October, 1949.

# NEW PATENTS

## Electrical Specifications Recently Published

*The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.*

### 1944

13322. Submarine Signal Co.—Regulation and controlling of alternating-current line voltage. 17th September, 1940. (628804.)

### 1945

16141. Evans Electroselenium, Ltd., and Evans, A. E.—Batteries of photo-electric cells. 28th June, 1945. (628805.)

30531. General Electric Co., Ltd., and Willshaw, W. E.—Apparatus for accelerating charged particles, especially electrons, to very high velocity. 14th November, 1945. (628806.)

31230. Collins Radio Co.—Method and apparatus for medium high-frequency radio direction finders. 19th July, 1943. (628955.)

33172. Compagnie Générale de Télégraphie sans Fil. —Devices for landing aircraft by means of ultra-high-frequency signals. 26th October, 1944. (628956.)

34779. Ward & Goldstone, Ltd., and Willett, W. H. —Moulded tea pots and the like. 21st December, 1945. (628808.)

### 1946

8930. Standard Telephones & Cables, Ltd.—Radio beacons of the overlapping-pattern type. 23rd April, 1945. (628961.)

9878. Marconi's Wireless Telegraph Co., Ltd.—Method of producing a liquid dielectric. 14th November, 1944. (628962.)

10929. Marconi's Wireless Telegraph Co., Ltd.—Television systems. 30th December, 1944. (628963.)

11007. Philips Lamps, Ltd.—Moving-core inductance coils. 5th January, 1942. (628812.)

13962. Compagnie Générale de Télégraphie sans Fil. —Means for the phase displacement of a wave in a waveguide. 22nd March, 1944. (628814.)

14489. Metcalfe, C.—Electric fires. 14th May, 1946. (628964.)

15822. Creed & Co., Ltd., and Salmon, R. D.—Printing telegraph receivers. 24th June, 1947. (628815.)

15921. Berwick, H. W.—Radio or television aerials. 27th May, 1947. (629092.)

19817. Marconi's Wireless Telegraph Co., Ltd., Twatt, J., and Lang, L. C.—Echo-sounders. 2nd July, 1946. (628966.)

21189. Ranzi, U.—Driving machines comprising in combination, a centrifugal clutch and an electric motor. 13th July, 1945. (628967.)

21375. Weller, R. H., Weller, M. V., Weller, C. E., Weller, E. I., Weller, E. C., and Weller, I. D. (trading as Weller Manufacturing Co.).—Electrically heating soldering tool. 22nd May, 1946. (628968.)

21392. Submarine Signal Co.—Apparatus for echo distance measurement. 5th January, 1940. (628969.)

22380. Marconi's Wireless Telegraph Co., Ltd.—Television systems and apparatus. 26th July, 1945. (628971.)

22705. British Thomson-Houston Co., Ltd.—Remote indicating magnetic compass systems. 30th July, 1945. (628819.)

22750. Metcalfe, C.—Electric fires. 31st July, 1946. (628972.)

24397. British Thomson-Houston Co., Ltd.—Suspension of machines such as electric traction motors. 16th September, 1943. (628820.)

26162. Philips Lamps, Ltd.—Inductances. 10th March, 1943. (Addition to 626946.) (628823.)

26163. Philips Lamps, Ltd.—Signalling by frequency modulated carrier waves. 25th November, 1942. (628978.)

27340. Compagnie Générale de Télégraphie sans Fil. —Radar systems. 6th December, 1939. (628981.)

28266. Metropolitan-Vickers Electrical Co., Ltd., and Hollyer, E. B.—Dynamo-electric machines of the metadyne kind. 20th September, 1946. (628827.)

28267. Metropolitan-Vickers Electrical Co., Ltd., and Hollyer, E. B.—Control systems for electric motors. 20th September, 1946. (628828.)

28269. Metropolitan-Vickers Electrical Co., Ltd., and Hollyer, E. B.—Control circuit arrangements in electric motor equipments. 20th September, 1946. (628629.)

28271. Metropolitan-Vickers Electrical Co., Ltd., and Hollyer, E. B.—Dynamo-electric machines. 20th September, 1946. (628830.)

28272. Metropolitan-Vickers Electrical Co., Ltd., and Hollyer, E. B.—Electric motor equipments and control systems therefor. 20th September, 1946. (628831.)

30528. Standard Telephones & Cables, Ltd.—Selenium rectifiers and photocells. 2nd June, 1944. (628832).

31124. Marconi's Wireless Telegraph Co., Ltd.—System for separating synchronizing pulses from signal-modulation pulses. 18th October, 1945. (628833.)

31197. Liquidometer Corporation.—Electrical measuring and control devices. 8th July, 1946. (628834.)

32482. Standard Telephones & Cables, Ltd.—Electron-discharge devices. 1st November, 1945. (628995.)

36433. Philips Lamps, Ltd.—Inductive coupling devices for radio receivers. 9th August, 1943. (628998.)

37239. Bryans Aeroquipment, Ltd., and Harland, A. B.—Sound recording and reproducing machines. 18th December, 1946. (628838.)

37260. Philips Lamps, Ltd.—Electric-discharge tubes comprising at least one condenser. 10th September, 1943. (628839.)

38056. Marconi's Wireless Telegraph Co., Ltd., and Fagan, C. P.—Apparatus for the direct hydrogen-ion determination of agricultural soil and the like. 30th December, 1946. (628840.)

### 1947

426. British Thomson-Houston Co., Ltd., and Pollock, A. A. — Liquid-cooled journal bearings. 6th January, 1947. (628841.)

3535. Bendix Home Appliances, Inc.—Clothes washing machines. 20th February, 1946. (628846.)

4177. Brown, W. G.—Loudspeaking telephone equipment. 13th February, 1947. (629014.)

5510. Welwyn Electrical Laboratories, Ltd., and Burkett, R. H. W.—Electrical measuring devices. 26th February, 1947. (629009.)

5573. Philips Lamps, Ltd.—Mounting of trimmer condensers. 13th May, 1944. (629016.)

6204. Donovan Electrical Co., Ltd., and Donovan, E. T. G.—Operating and control mechanism for portable electric drilling, grinding and like tools. 5th March, 1947. (628854.)

6322. Schweizerische Lokomotiv-und Maschinenfabrik. Single-axle drive on an electrically driven rail vehicle. 6th March, 1946. (629018.)

8236. Philips Lamps, Ltd.—Transmitting-receiving circuits for short waves. 28th July, 1944. (Addition to 623069.) (628862.)

9690. Philips Lamps, Ltd.—Mixing circuits for the production of combination frequencies. 2nd September, 1944. (628866.)

9896. Philips Lamps, Ltd.—Superheterodyne radio receivers. 14th April, 1947. (629021.)

10006. Naamlooze Vennootschap Philips' Gloeilampenfabrieken. — Stators for rotary electrical machines. 11th August, 1944. (629022.)

10201. Soundscriber Corporation.—Sound recording and reproducing apparatus. 26th February, 1945. (628884.)

10220. Milnes, A. G.—Magnetic amplifiers. 17th April, 1947. (628885.)

10836. Westinghouse Electric International Co.—Bearings. 26th April, 1946. (629028.)

11455. Philips Lamps, Ltd.—Ferrites and ferrite cores. 6th July, 1944. (629031.)

12342. Thermionic Products, Ltd., and Colley, A. G.

deQ.—Apparatus for recording and reproducing sound. 7th May, 1947. (628898.)

12661. Wipac Development, Ltd., and Luttmer, W. —Inductor type dynamo-electric machines such as inductor magnetos for internal-combustion engines. 9th May, 1947. (628869.)

13661. Westinghouse Electric International Co.— Frequency determining circuits for high-frequency oscillators. 25th June, 1946. (628901.)

14689. Morgan Construction Co.—Electrically-driven rotary shears. 19th July, 1946. (628905.)

15109. Pritchett & Gold & E.P.S., Co., Ltd., Honey, E. M. O., and Hardy, C. R.—Battery separators. 9th June, 1947 (628908.)

17717. British Thomson-Houston Co., Ltd., Bowen, A., and Moir, J.—Means for driving sound films. 4th July, 1947. (628913.)

18928. Cossor, Ltd., A. C., and Bell, D. A.—Radio antennae coupling arrangements. 24th June, 1946. (628916.)

20697. Airmec, Ltd., Jones, V. A., and Pike, E. G.— Trimmer condensers. 30th July, 1947. (628922.)

20802. Westinghouse Electric International Co.— Tumbling apparatus. 10th August, 1946. (628923.)

21451. Electro-Refractaire. — Heat-cast refractories. 19th July, 1941. (628927.)

21715. Sperry Gyroscope Co., Inc.—Terminations for ultra-high-frequency electromagnetic wave transmission lines. 30th July, 1943. (628928.)

21988. Marconi's Wireless Telegraph Co., Ltd.— Antenna arrangements. 28th February, 1946. (628929.)

23178. United Aircraft Corporation.—Compressors particularly for use with aircraft power plants. 30th October, 1946. (629044.)

24504. Standard Telephones & Cables, Ltd.—Plug-in relay. 21st September, 1946. (628936.)

24667. General Electric Co., Ltd., and Coleman, A. S.—Electric lampholders. 8th September, 1947. (628937.)

25396. Dudli, A.—Table-mounting peeling or scraping machine with electric drive, especially for the peeling or scraping of potatoes and the like. 19th July, 1946. (628938.)

26048. British Thomson-Houston Co., Ltd.—Methods of stabilizing methyl-substituted polysiloxanes. 28th September, 1946. (629046.)

28145. Philips Electrical, Ltd.—Circuit-arrangements for the expansion of electrical oscillations. 13th September, 1946. (Addition to 624886.) (629050.)

28199. Simplex Electric Co., Ltd., and Hunt, J. J.H. —Electric tumbler switches. 22nd October, 1947. (629051.)

28235. Westinghouse Electric International Co.— Dielectric materials. 4th December, 1941. (629053.)

28254. British Thomson-Houston Co., Ltd.—Fabricated articles parts of which are vitreous material and parts of carbonaceous material. 24th October, 1946. (629054.)

28428. Wolseley Sheep Shearing Machine Co., Ltd., Macnamara, H. J., and Banks, C. H.—Electric immersion heaters for portable vessels. 24th October, 1947. (629057.)

28583. Crompton Parkinson, Ltd., and Duckett, W. —Dynamo-electric machines. 25th October, 1947. (629063.)

28698. Hedbergs Successors Aktiebolag.—Battery terminal clamps. 30th January, 1947. (629071.)

28722. Ericsson Telephones, Ltd., and Distin, L. S. —Polarized electromagnetic devices. 28th October, 1947. (629073.)

28797. Crook, L. H.—Electron tube. 30th June, 1942. (629077.)

34215. Autopulse Corporation. — Electromagnetic motors. 22nd May, 1943. (629083.)

### 1948

3008. Thor Corporation. — Machine for washing dishes. 14th June, 1944. (Divided out of 628950.) (629013.)

### Amended Specifications

590250. Compagnie de Produits Chimiques et Electro-Métallurgiques Alais, Froges et Camargue. — Method of readjusting the supporting and current-supplying metal rods of continuous self-baking electrodes.

603387. General Electric Co., Ltd., and another.— Electric motor control systems.

607440. Hill, R. F., and others.—Super-regenerative wireless receivers.

617440. Standard Telephones & Cables, Ltd.—Receivers for time modulated electric pulses.

617762. Metropolitan-Vickers Electrical Co., Ltd., and others. Electrical slip-ring assemblies.

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# Telephony in Finland

## Extensions of Long-Distance Network

SPARSE population and considerable distances between centres have resulted in the development of Finland's long-distance telephone network principally on the basis of open wire lines, many of which are now operated on the high-frequency carrier system. Nevertheless, the density of traffic has already justified cable on one route and is fostering the consideration of the wider application of cables.

Orders for important extensions to the Finnish network have been received by Standard Telephones & Cables, Ltd., London, in the face of determined foreign competition.

A chain of three new three-channel carrier systems can provide through circuits from Helsinki, the modern capital in the south, to Rovaniemi in the north. Over part of the route, as far as Oulu, there will be installed a twelve-channel system of a type which has found favour in Spain, Argentina, South Africa and elsewhere since the war. In these three territories alone, some 70 systems have been supplied, or are on order. Another twelve-channel system is to be installed between Helsinki and Kuopio in the north-east. Other three-channel systems will run from Helsinki east-north-east to Joensuu and south-west from Jyvaskla to Turku.

The equipment will be constructed for mounting in the latest manner, which economizes floor space and eases maintenance, while other three-channel improvements provide more flexibility than was the case with pre-war systems, many of which are still giving good service in Finland.

Severe climatic conditions during the winter have made it necessary to reduce below normal the repeater spacings in the twelve-channel systems in order to offset heavy transmission losses during the cold period.

# CONTRACT INFORMATION

**ACCEPTED TENDERS AND PROSPECTIVE ELECTRICAL WORK**

## Contracts Open

*Where "Contracts Open" are advertised in our "Official Notices" section, the date of the issue is given in parentheses.*

**Belgium.**—BRUSSELS.—5th October. Belgian State Railways. Multiple wire conductors or leads for telecommunications apparatus. (C.R.E. (I.B.) 26169/49. Ten/633/I.B.2.)*

**Bournemouth.**—7th October. Corporation. 150 street lighting columns. (23rd September.)

**Burntisland.**—7th October. Town Council. Electrical works in connection with the erection of twelve houses on the Grange site. C. R. Douglas and Co., surveyors, 15, East Port, Dunfermline.

**Cheshire.**—15th October. The County Council invites applications from firms wishing to be considered for placing on the new list of approved contractors to be invited to tender for works up to £1,000 in value (electrical works). District architect, Remenham, Alderley Road, Wilmslow.

**Coventry.**—7th October. City Housing Committee. Electrical installations in 128 houses. (See this issue.)

Education Committee. Electrical contractors are invited to apply for their names to be included on the list selected to tender for various works in the new schools programme. (23rd September.)

**Durham.** — County Education Committee. Electrical installation in Bilton Hall County School, Jarrow. County architect, Court Lane, Durham.

**Iran.**—TEHRAN.—Bank Melli. Electrical material, including cables, electrical accessories, etc. (C.R.E.) (I.B.) 24681/49. Com/2853).*

**Lancashire.**—8th October. County Council. Electrical installation at Hutton Houses Rest School. (See this issue.)

**Longbenton.**—5th October. U.D.C. Street lighting installation, Dudley-Annitsford Road. (23rd September.)

**Luton.**—10th October. Borough Council. Supply, erection and wiring of street lighting columns. (23rd September.)

**Marple.**—18th October. U.D.C. Street lighting equipment. (See this issue.)

**New Zealand.**—WELLINGTON.—31st January. State Hydro-Electric Department. Four 3,333 kVA transformers. (C.R.E. (I.B.) 23791/49. Ten/618.)*

WELLINGTON.—7th February. State Hydro-Electric Department. One 12,000 kVA, 11kV, 3-phase tap-changing on-load voltage regulating transformer. (C.R.E. (I.B.) 26225/49. Ten/662/I.B.I.)*

**South Africa.**—DURBAN.—2nd December. City Electricity Department. 33 kV cable, pilot cable and joints. (C.R.E.) (I.B.) 25882/49. Ten/668.)* 9th December. 33 kV transformers. (C.R.E.) (I.B.) 25989-49. Ten/669).*

**Southampton.**—20th October. Corporation. Electrical installation in Botley Road Infants' School. (23rd September.)

**Uruguay.**—MONTEVIDEO.—21st October. Administracion General de las Usinas Electricas y Telefonos del Estado. Porcelain insulators, cut-outs, etc. (C.R.E. (I.B.) 25994/49. Ten/660/I.B.2.)*

**Wandsworth.** — 16th November. Borough Council. Electrical installation at Greaves Place Depot, Garratt Lane. Borough surveyor, Municipal Buildings, S.W.18.

*Specifications may be inspected at the Commercial Relations and Exports Department, Thames House North, Millbank, S.W.1.

## Orders Placed

**Bradford.**—Corporation. Installation of electricity in 122 houses, Eccleshill and Clayton estates (£3,519).—T. D. Long.

Sewage Committee. Electrostatic dust precipitators at sulphuric acid plant (£12,785).—W. C. Holmes.

**Carlisle.**—Corporation. Electrical installations, Wigton Road estate (£1,033).—North Western Electricity Board.

**Glasgow.**—Corporation. 500 standard street lighting lanterns (£2,937).—Revo Electric Co.

**Swanscombe.**—U.D.C. Electrical installations in flats, Milton Street, Swanscombe (£200).—Hollisters, Northfleet.

## Contracts in Prospect

*Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.*

**Aberdare.**—College of Further Education, for Glamorganshire C.C.; county architect, Cardiff.

**Aldershot.**—Flats (20), Holly Road; borough engineer.

**Ashbourne.**—Houses (17), Biggin by Hartington; J. H. Wheeldon, R.D.C. surveyor.

**Barnstaple.**—Houses (40), Forches estate; borough surveyor.

**Bexley.**—Houses (70), Royal Park estate; borough surveyor, Council Offices, Bexleyheath.

**Bristol.**—Large yeast factory; Distillers Co., Ltd., Torphichen Street, Edinburgh, 3.

**Burnley.**—Houses (100), Brunshaw estate; Wm. Thornton & Sons, Ltd., builders, 38, Wellington Road, Liverpool, 8.

Extensions to Wood Top Works, Villiers Street; Joseph Lucas, Ltd., Gt. King Street, Birmingham, 19.

**Bury.**—Houses, Fairfield estate (50), and Redvales (20); borough engineer.

**Blyth.**—Houses (242), Cowpen Road area; D. W. Foster, borough engineer.

**Cannock.**—Houses (39), Huntington, for R.D.C.; J. P. Roberts, clerk, Council Offices, Penkridge, near Stafford.

**Carlisle.**—Technical college; Buckland and Haywood, architects, Norwich Union Chambers, Congreve Street, Birmingham.

**Catterick.**—County secondary modern school (£130,000) for North Riding E.C.; county architect, Northallerton.

**Chatham.**—Houses (78), Wayfield estate; borough surveyor.

**Crook and Willington.**—Houses (168), Low Willington, for the U.D.C.; Page, Son & Hill, architects, 75, King Street, South Shields.

**Douglas (I.o.M.).** — Houses (134), Spring Valley estate; borough engineer.

**Ealing.**—Cinema and shops, Ruislip Road; Associated British Cinemas, Ltd., 30, Golden Square, W.1.

**Eccles.** — Rebuilding and extension of premises; W. Fryer & Sons, Ltd., 6/16, Church Street.

**Ellesmere Port.**—Scheme for civic centre on 20-acre site, Whitby Road, to include town hall, police and fire stations, law courts, Government offices, etc., for U.D.C.; C. W. Davis, surveyor, Council Offices.

**Glasgow.**—Multi-storey blocks of flats, Berryknowes Road and Crathie Drive; J. H. Ross, electrical and mechanical consultant, 45, Hope Street.

Catholic church, Baillieston; Gillespie, Kidd & Coia, architects, 19, Waterloo Street.

**Gosforth (Northumberland).** — Houses (30), Regent Farm estate, for U.D.C.; M. J. Liddell & Sons, builders, Hunters Road, Gosforth.

**Haltwhistle.**—Office block at works of Kilfrost, Ltd.; Cackett, Burns, Dick & McKellar, 21, Ellison Place, Newcastle-on-Tyne.

**Hawick.**—Factory buildings, Teviot Road (£40,000); Robert Pringle & Sons, Ltd., hosiery manufacturers, Rodono Mills.

**Jarrow-on-Tyne.**—Fertilizer factory for Carr & Hutchinson, South Shields; V. Ord, county architect's dept., Shire Hall, Durham City.

**Kidsgrove.**—Houses (88), Crown Bank estate; M. R. Gethin, U.D.C. surveyor, Town Hall.

**Llanidloes.**—Secondary school, primary school and joint canteen, for Montgomery E.C.; H. Carr, county architect, County Offices, Newtown, Mont.

**London.**—DEPTFORD.—Large works extensions; J. Stone & Co., Ltd., engineers and founders, Arklow Road, S.E.14.

ISLINGTON.—Flats (25), Poet's Road; flats and maisonnettes (32), Holly Park, and flats (24), Queen Margaret's Grove; H. Monson, architect, 120, Moorgate, E.C.2.

ROTHERHITHE.—Office block, Spa Road and Rouel Road, for Ministry of National Insurance; Ministry of Works, 19, Cornwall Terrace, N.W.1.

**Mangotsfield.**—Houses (40) and four shops; R.D.C. surveyor, Staple Hill, Bristol.

**Mansfield Woodhouse.**—Houses (64), Cox's Lane Scheme 5; L. Walker, surveyor, Council Offices, Manor House.

**Newcastle-on-Tyne.** — Halls of residence, Etherstone Avenue, for Council of King's College; Mauchlen & Weightman, architects, 12, Saville Row.

**Newport (I.o.W.).**—Houses (50), Pan estate; A. E. Jukes & Son, Ltd., builders, 40/60, King George's Avenue, Southampton.

**North Riding.**—Schools, Grangetown, Thornaby, Helmsley, Catterick and Saltburn; county architect, Northallerton.

**Nottingham.** — Rebuilding Nottingham and District Technical College; C. Howitt, architect, St. Andrews House, Mansfield Road.

**Peterborough.**—School, Barnack; Portess & Richardson, architects, Lloyds Bank Chambers, Cathedral Gateway.

**Prescot.**—Dwellings (40) and eight shops with maisonnettes over, Bryer estate, for U.D.C.; Gornall, Kelly & Shelton, architects, Britannic House, 8, Hardshaw Street, St. Helens.

**Sheffield.**—Omnibus garage, Herries Road; Fletcher & Co. (Contractors), Ltd., Forest Road, Mansfield.

**Shrewsbury.**—Dwellings (104), Oakfield Road; Wilson Lovatt & Sons, Ltd., builders, Clarence Street, Wolverhampton.

**Sunderland.**—Rebuilding to ground floor level of stores in Fawcett Street belonging to Binns, Ltd., destroyed by fire; W. & T. R. Milburn, architects, 17, Fawcett Street, Sunderland.

**Sussex.**—Schools at Steyning and Rose Green, Bognor Regis; F. R. Steele, county architect, Chichester.

**Sutton-in-Ashfield.**—Houses (86), Hardwick Lane; D. Sweeney & Palmer, Ltd., Aspley, Nottingham.

**Tunbridge Wells.**—Dwellings (58), Ramslye estate; H. P. Bishop, borough surveyor, Town Hall.

**Warwickshire.**—Secondary school, Kingsbury (£180,000); county architect, County Hall, Warwick.

**Watford.**—Flats (72), North-western Avenue; Globe Contractors, Ltd., Beechwood Rise.

**Worcester.**—Houses (36), Newtown No. 2 estate; city engineer.

Primary school, Brickfields; Willis, Llewellyn Smith & Waters, architects, Albany House, Britannia Square.

**Worthing.**—Primary school, Findon Valley; schools architect, Town Hall.

**Wrexham.**—Fire station (£20,000), for Denbighshire C.C.; county architect, County Offices, Wrexham.

## Trade Marks

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered within a month of 21st September.

No. 676,724 (design). Electrical apparatus included in Class 9.—Aviation Corporates, Ltd., 50, Pall Mall, London, S.W.1.

LODESTAR. No. 677,714. Class 9. Thermostatic devices for controlling the rate of boiling of liquids.—Lodestar Products, Ltd., 41, North John Street, Liverpool, 2.

THE HAWKINS ELECTRIC HOSTESS (design). No. 672,061. Class 11. Trolleys or portable apparatus incorporating electrically heated receptacles for keeping food warm.—L. G. Hawkins & Co., Ltd., 30-35, Drury Lane, London, W.C.2.

BIRLOY. No. 675,319. Class 11. Parts of furnaces included in Class 11, and made of heat-resisting metals or metal alloys.—Birlec, Ltd., Birlec Works, Tyburn Road. Erdington, Birmingham, 24.